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(Phoenix Gazette Photo)

$X^2 - .2Y^2 \dots = \text{a Flattop}$

The official U.S. bicentennial emblem was painted on top of the Arizona Coliseum & Exposition Center in Phoenix with the help of computer programs created by a 20-year-old programmer. Complicating the project was the fact that the roof of the coliseum is shaped like a hyperbolic paraboloid. Story on Page 2

10%-15% Rise in Spending Likely for Many DP Users

Upgrades in Vogue

By Patrick Ward
Of the CW Staff

Budgets for most medium to large-size DP operations are going up by less than 15% next year, but nearly a third of the DP managers contacted in a *Computerworld* survey had recently upgraded or planned to upgrade their CPUs.

Personnel budgets are almost uniformly up, reflecting both higher salaries and additional hiring. And paper supplies, which some DP managers see costing 20% to 30% more in a year, were frequently mentioned as a source of higher costs and management headaches.

While most DP managers expected their

1974 spending would increase by 10% to 15%, there were exceptions.

50% Increase

Anaconda Corp.'s DP budget will be up by about 50%, according to V. Subra-

What's in Store for '74

manyam, director of management systems. The firm plans an almost 80% increase in DP personnel hiring, especially programmers and analysts. Hardware in-

(Continued on Page 4)

370s Use Far More Energy

In Btus and kVAs Those 360s Are Truly Power-Less

By E. Drake Lundell Jr.

CW Washington Bureau

WASHINGTON, D.C. - The IBM ads tell us to think of the computer as "mental energy," and this may help sell 370s, but to those who think of it as "electrical energy" the 360 should still look pretty good in these energy-short times.

The 360s use far less power than 370s both in terms of the number of Btus that must be generated to cool them and in terms of the number of kVAs (roughly equivalent to watts) to run them, according to a technical report prepared by the Computer Lessors Association (CLA) here.

For example, a 370/145 with 512K

requires 3.31 times more Btus and 3.8 more kVAs to operate than does a 512K Model 50 in the older line.

In real figures the 145 requires 82,750 Btus for its operation and 28.5 kVAs, compared with the 360/50 which needs only 25,000 Btus and 7.5 kVAs to operate.

Three for One

These figures clearly show that a user could even operate two Model 50s and still save substantially on what it would cost in terms of power consumption to run one 145. They also show that the really hard-pressed user could have three Model 50s running and still be under the

power consumed by the one 145.

In addition, the amount of power used may or may not affect a computer center's operations as brownouts and blackouts occur later this year around the country. But it appears that substantial savings can be made on users' electrical use which may prevent such occurrences

or minimize their effects.

The figures hold true for most of the 360/370 comparisons as seen in the following examples:

• A Model 135 with 256K needing 54,500 Btus and 18 kVAs uses 1.07 times the power of a 360/65 with 256K

(Continued on Page 4)

IBM 3740 Programmable

WHITE PLAINS, N.Y. - IBM has upgraded its 3740 data entry system to include expanded arithmetic and data editing functions; stored program control

for searching, updating, formatting, keyboard operations and printing; a new 3717 "steel belt" engraved font 155 line/min printer; expanded communications including multipoint data link control; and OS/VS1 370 support for diskette input/output.

An Application Control Language (ACL) transforms the data entry system into "programmable work stations" and includes an optional translator that eliminates the need to use a CPU for object code creation, IBM said.

Most of the capabilities are field-installable, but the models 3 and 4 work stations are required for the expanded communications. These will be available in the fourth quarter of 1974 under IBM's ETP at \$215/mo to \$245/mo. All features will be available in the last half of 1974 except OS/VS1 support set for mid-1975.

SPECIAL ISSUE

This is *Computerworld's* special combined year-end review issue dated Dec. 26/Jan. 2. The next issue will be dated Jan. 9.

★ CW ★
Year-End
Review

Follows Page 20

IBM Appeal in U.S. Case Dismissed

By E. Drake Lundell Jr.

Of the CW Staff

NEW YORK - The U.S. Court of Appeals here has dismissed IBM's appeal of a contempt of court ruling issued in its case with the government, but the firm still has other appeals routes open before it must start paying the \$150,000 daily fine ordered for the contempt.

The appeals court, which heard arguments on the appeal in August, did not rule on the correctness of the contempt citation, but rather spent almost five months determining it had no jurisdiction in the case - in effect letting the con-

tempt ruling stand.

IBM, however, said it intended to seek further review of the matter in the courts and has almost a month to appeal the three-court ruling to the entire nine-man appeals court or to push its appeal to the Supreme Court, legal sources said.

IBM further commented on the decision:

"The appeals court did not rule on the merits of IBM's claim of privilege. It ruled by a 2 to 1 decision that it had no jurisdiction to review the issue. We had asked that our claim of privilege on the documents be examined by impartial masters previously appointed by the court for this purpose. Having been denied this right we intend to seek further review in the courts promptly."

Documents Given to CDC

At question are documents that IBM turned over to Control Data before that company settled with IBM, and which IBM later claimed were turned over "inadvertently" and should be subject to a claim of attorney-client privilege.

Honeywell Prices Up

Honeywell, like IBM last month, has raised prices on all rental equipment and some services. Story on Page 2

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Credit Firm Cited

The Federal Trade Commission, in challenging the business practices of Retail Credit Corp., is seeking to give individuals the right to see printouts of their credit files. Story on Page 2

Honeywell Ups Rental, Service Prices

By Vic Farmer
Of the CW Staff

WALTHAM, Mass. — Honeywell, following IBM's price increase move just a month ago, has raised prices on all rental equipment and some services. The increases are nearly a mirror image of IBM's changes:

- A 2% increase in rental rates on all DP equipment effective Jan. 1. Existing

users have a one-year price protection clause during the first year of their contract and as such will be protected until their anniversary. Users who have passed their first anniversary date as of Jan. 1, 1974, will have three months' grace, until April Fool's Day, before they will have to add the 2% to their bill.

- A 2% increase on purchase of Series 6000 CPUs only.

- A 2% increase on purchase of Series 58 CPUs and peripherals.

- A 4% to 5% increase on maintenance depending on type of equipment and the configuration.

- A 5% increase on Data Network Service, Honeywell's time-sharing service.

- A 10% increase on hourly on-call maintenance.

- A 10% increase on System Engineering Services.

- A 10% increase on spare parts.

- A \$25 per student enrollment fee for non-tuition education courses.

Honeywell made its request to the Cost of Living Council (CLC) on Nov. 1, approximately one month after IBM. CLC granted this request Nov. 14.

After the IBM increases last month, several industry sources predicted a rash of similar increases now that the IBM umbrella had moved up 2%, and Honeywell is the first mainframe supplier to ride in on that wave. Honeywell, like IBM, attributed the increase to rising costs of doing business.

IBM System/2 Mini Is Due, Isn't It?

WHITE PLAINS, N.Y. — IBM is apparently poised to introduce its System/2 minicomputer on or about Jan. 18. The machine is reported to have an 18-bit word and will be incompatible with the System/3 line.

A half-word or nine bits on the new S/2 is apparently an attempt to resolve an internal coding conflict within IBM concerning Ascii and Ebcidic compatibility. The Ascii reference may indicate the S/2 will have communications capabilities.

The mini will have limited batch capability and will be oriented primarily toward interactive applications. The system is expected to be priced between \$800/mo and \$1,000/mo, according to industry sources.

IBM would neither confirm nor deny the reports of the impending announcement, which is its usual policy, a spokesman noted.

It All Adds Up to a Flattop

By Marvin Smalheiser
CW West Coast Bureau

PHOENIX — How do you get a hyperbolic paraboloid to look like the official emblem of the U.S. bicentennial? That was the problem facing John M. Glitsos who helped paint the emblem on top of the 110,000-sq-ft roof of the Arizona Coliseum & Exposition Center here.

The project was complicated by the fact

that the roof of the coliseum is shaped like a hyperbolic paraboloid. Glitsos, a 20-year-old senior programmer at the Burn Treatment Skin Bank, Inc. and a computer major at Arizona State University, developed the computer programs necessary to determine how to paint the roof so the emblem appears flat when viewed from the air.

A total of 37 equations and 360 critical distances was fed into the United Computing Services (UCS) time-sharing system in Kansas City, Mo.

To design the emblem, it was necessary to intersect a right cylinder and a hyperbolic paraboloid in three-space, Glitsos said.

The intersection would then be "measured" in the computer, the critical distances being from the center, or "saddle-point," of the roof to the edge of the cylinder. Each distance was to correspond to a degree measure from one to 360.

Given the distances and degree measures as well as the equation for each of the 35 lines, circles and tangents that form the design, the computer could in a single run distort and enlarge the drawing.

Research in calculus, geometry and engineering texts was required to get a common equation for a hyperbolic paraboloid, Glitsos said.

The equation, however, seemed to be in a form that defied solution. When the project seemed hopeless, Theodore Kraver, operations manager and secretary-treasurer of the Burn Treatment Skin Bank and an MIT engineering graduate, was consulted.

He suggested another equation and in a few days the final equation was derived: $x^2 - .2y^2 - 1180.2225z + 7081.3382 = 0$.

Errors by rounding were determined to be in the .002% range which placed each of the 4,965 points making up the emblem within eight inches of its optimum location on the roof.

System Catches Data On Blue Crab Fishing

NEWBERRY, S.C. — A fisheries biologist has developed a system for studying the crab fishing industry on a weekly basis.

Raymond J. Rhodes of the South Carolina Wildlife and Marine Resources Department utilizes data from business transactions between crabbers and firms which process the crabs to analyze changes from week to week in the amount of crabs being caught.

Rhodes uses the computers of Blue Channel Corp., Port Royal, S.C., one of the largest blue crab processors, to analyze the changes.

New Morality Not for DP

AKRON, Ohio — Will computers become prudes? Will they sink into the morass of puritanical tradition?

If Tim Taylor has his way, they will. Taylor, a graduate assistant at the University of Akron, was upset to learn that students using the university's computer-assisted instruction center often typed four-letter expletives and obscene instructions into the computer. So he programmed the computer to demand an apology for an offending word.

If the student refuses to apologize, the computer shuts itself off.

FTC Cites Credit Firm

By E. Drake Lundell Jr.
CW Washington Bureau

WASHINGTON, D.C. — Almost 50 million Americans would gain the right to see printouts from their computerized files kept by Retail Credit Corp. if the firm accepts a consent order sought by the Federal Trade Commission here.

Under the consent order the firm would have to agree to stop all of the practices challenged by the FTC, and would be required to supply complete copies of individual dossiers at the individual's request.

To date, citizens are only allowed access to a report of "the nature and substance" of their files, but the FTC in a wide-ranging complaint against the firm indicated that sometimes Retail Credit failed to report fully on what was in the files.

Deceptive Methods

In addition, the FTC charged that Retail Credit, one of the nation's largest credit reporting agencies, had used deceptive and unfair methods to collect some of the information it keeps in its computerized data banks and gives out to credit-granting agencies every year.

The commission's complaint said the massive data bank maintained by Retail Credit contains information on a person's reputation and character as well as strictly credit information.

The complaint alleged that Retail Credit uses a percentage system requiring investi-

gators to turn up a certain amount of adverse information on individuals investigated and that the firm permits investigators to misrepresent the fact that they work for a company to which the subject of the investigation has applied for a job or insurance.

The complaint also alleged that Retail Credit had violated the Fair Credit Reporting Act by furnishing credit reports to unauthorized sources and by reporting obsolete information.

One way in which the company reports this information, the complaint stated, is through the use of stock sentences or phrases indicating such information is in the firm's files but cannot be legally released.

Retail Credit, in addition to expressing surprise at the complaint, claimed it had made "every effort" to adhere to the letter and spirit of the Fair Credit Reporting Act.

But the FTC said the Atlanta-based firm had been aware of the investigation for several years and had even tried to block the FTC from getting some company records during the investigation.

The firm currently maintains files on about 45 million Americans, and can reportedly get information on 98% of the population if requested.

The FTC said it had received nearly 100 complaints about the operations of Retail Credit in the past few years regarding its credit-gathering and reporting functions.



Take Note of This Gift

Art and technology? Not such an unlikely combination at MIT where Harold J. Hanham, dean of the School of Humanities and Social Sciences, and Richard J. Clayton of Digital Equipment Corp. watch Barry Vercoe, assistant professor of music, at the electronic keyboard, activate a DEC PDP-11/45 given to MIT by DEC.

Vercoe is developing an electronic music production facility at MIT, which he said, "will be a tool both in the hands of the teacher and the composer that will greatly aid the development of creativity. The facility also will provide an excellent tool in the teaching of musical composition for conventional instruments."

The computer — coupled with music input devices — also will lend itself to other forms of music research, such as syntactic analysis of music structures.

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President and principal consultant of PDC... more than 18 years experience in finding and implementing feasible solutions to practical problems in many systems areas...has designed and implemented two major performance simulators, S3 and SAM, a number of operating systems, the COMMEN compiler, and 8 data base systems...a nationally known lecturer in the data base and system performance fields, has lectured for the Professional Development Committee of the ACM in both of these areas, is an ACM National Lecturer, and currently participates in the AMA Data Base Design Seminar...principal author of the report, "Data Base Management Systems: A Critical and Comparative Analysis," and the video course "Data Base Concepts and Methods"...has been invited speaker and panelist at many national meetings.

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Computer Abuse Act?

New Approach May Be Needed for DP-Related Crime

By E. Drake Lundell Jr.

Of the CW Staff

MENLO PARK, Calif. — There may be a need for "revolutionary" legal approaches to deal with computer-related crimes and criminals in the form of a uniform computer abuse act, according to a report prepared for the National Science Foundation.

However, since there is little agreement among computer professionals over what exactly constitutes computer crimes, and because such criminal manipulation of computer systems is a relatively new phenomenon, it may well be too early to propose such safeguards with any degree

of finality, according to the report entitled "Computer Abuse" issued by a group which has studied the problem for several years.

"Computer technology and data communications technology are subject to increasing abuse as they penetrate into sensitive areas of human activity," the report said, predicting such abuses will increase as more people begin working with computers and as the rewards for such abuse become steadily higher.

The researchers, led by Donn Parker of Stanford Research Institute here, define computer abuse as "all types of acts distinctly associated with computers or

data communications in which victims involuntarily suffer or could have suffered losses, injuries or damage or in which perpetrators receive or could have received gain."

After a study of over 148 cases of computer crimes reported since 1964, the group said without further study "it is not yet clear that computer abuse is unique, i.e., a change in the kind of social abuse rather than merely a change in degree," but it indicated computer technology could definitely be expected to "produce significant changes" in the nature of abuse in the future.

The problem today, the group said, is to

determine whether changes being caused by computer-related crime and criminals can be dealt with by incrementally changing the current laws or not.

"Revolutionary change may be needed," the researchers stated, "but may not be perceivable because we are in an intense and rapid period of transition from a manual, paper-based society to an automated society."

"A shift in trust from people to people-produced systems or even a shift to different concepts of suspicion and trust in business transactions could require replacement of present business law with a whole new law based on new concepts — a change that must be accomplished in the face of impending disaster in business relationships," they added.

'No Turning Back'

Furthermore, they warned, "computer abuse could go out of control if it were to pass some critical stage. The consequences could lead to social chaos, since there is no turning back to manual systems once the economy and society are geared to advanced levels of automation."

Although "technological methods to control computer abuse are necessary," these by themselves will not be sufficient, leading to the consideration of legal and social remedies, they noted.

And "even though computer manufacturers and several government agencies have major programs under way to develop technological solutions, effective levels of computer security and auditing of computer systems and applications are several years away from general realization," the report stated.

Because of this delay, the group agreed that a uniform computer abuse act may be necessary, but stated, "A lack of consensus among computer specialists as to what constitutes ethical or legal activities in their field requires further study before action."

At the same time, the report said, "Part of the control of computer abuse must come through professionalization of the more sensitive EDP occupations, such as programming and computer system maintenance. The most important actions needed are the building of strong professional organizations, enforceable codes of ethics and the attainment of general public support."

"Licensing key professionals and the most sensitive types of computer systems should closely follow professionalization efforts. The shift of trust for the well-being of society into the new computer-related occupations makes such actions imperative," it said.

"If we act quickly," the study concluded, "it may still be possible to develop technical, legal and social controls as anticipatory actions rather than as after-the-fact reactions."

Budgets Seen Rising by Less Than 15%

(Continued from Page 1)

creases will go toward upgrading peripherals and memory on the firm's 370/135 and adding communications capabilities.

The firm is also considering acquiring the AT&T Model 40, perhaps for use in the second half of 1974, in addition to its plans to bring in Data 100 RJE terminals and IBM CRTs.

Another user who saw his 1974 budget going up about a third said personnel will take about a third of the increase primarily in more people and higher pay.

His hardware budget, also up about a third, would go for additional main storage and some local on-line equipment.

In contrast, the DP budget at Precision Instrument Co. in Palo Alto, Calif., will drop about 50% as the firm gives up its in-house IBM 360/22 and switches to a service bureau.

Precision had used its computer for "everything," data factoring, procurement, purchasing and production control, according to H.D. Roebuck, vice-president, finance.

One large chemical company, which asked to remain anonymous, expects a budget drop next year despite expected increases in personnel costs. The drop will occur primarily because the company is moving from a leased 370/155 to a purchased 370/158. This means equipment costs will drop from \$40,000/mo to \$18,000/mo, due mainly to tax credits, etc., a spokesman noted.

While no other DP manager contacted pointed out such large savings through

upgrading, others told of upgrade moves they had made or planned. Generally, these involved moves from IBM 360/20s and 30s to IBM 370/135s or Burroughs B3700s or B3500s.

The hardware budget will be down at Indiana Lumberman's Mutual next year because of a move from a 360/30 to a Burroughs B3500, according to DP Manager Thomas Jasick.

The Burroughs system offers greater capability, utilizes a fast disk and packs "more bang for the buck," according to Jasick.

Nearby Indiana Gas exchanged its 360/30 for a 370/135 to handle increased transaction volume, according to C.M. Crawford, the firm's DP manager.

And Eli Lilly Co. is replacing its two 370/155s with two 370/158s.

Four of the 15 DP managers randomly surveyed said they planned to upgrade their communications equipment next year. For example, one DP manager plans to switch from Model 28s and 33s to Univac DCT-1000s and U-500s without significantly increasing his costs. The user expects the equipment will reduce line costs through faster transmission.

While companies hired to fit their individual needs, the companies showed considerable interest in hiring programmers and analysts.

George Berry, director of computer operations for Eli Lilly Co., said his firm is interested in hiring high-level people — analysts and above — people with management potential.

On the other hand, if the DP department at the Indianapolis Star-News does

any hiring this year, it will "probably be in operations and mostly trainees," according to DP Manager Don Prestel.

Increases in paper costs could be as high as 30% in 1974, one user warned. "We just couldn't get the paper for some of our key forms," he added.

Another DP manager said he found costs of paper supplies about 20% above what they were a year ago.

At the Star News, DP Manager Prestel is ordering 12-month supplies of "any hard stock type — like a postcard bill or a tag for inventory."

At Houghton Mifflin in California, DP Manager Ed Capella mentioned ordering a year's supply at a time of major forms like invoices, as a means of getting around the paper problem.

Another DP manager said he was looking into COM to alleviate the shortage.

Few of the DP managers mentioned any notable jumps in software budgets for next year, unless they were converting to new equipment.

On the use of packages, George Berry of Eli Lilly was perhaps typical of the users surveyed when he stated, "We are not expanding packages as a percentage of software spending."

In acquiring packages, "We do our homework and know exactly what we want, then start shopping around," V. Subrahmanyam of Anaconda stated.

His staff then determines how much modifications the packages will need to match Anaconda's requirements, Subrahmanyam said. Next step is to ask the vendors if they can make the necessary modifications, and, if so, what these changes will cost and how long they will take.

Although a few of the DP managers voiced a sense of foreboding about the coming year, only 7% of the DP managers surveyed admitted to having to delay any projects they wanted to implement next year because of a lack of budget for them.

IBM Bid Dismissed

(Continued from Page 1)

revenues in 1972, or around \$150,000.

Originally there were 1,200 documents involved in the case, but IBM has whittled this down to 700 after reviewing all of the documents and deciding it could turn over 500 to the government.

In most cases appeals from contempt orders of a judge during the pretrial phase of a case such as this are taken after the entire case has been completed, and not before it has really begun as IBM is requesting here.

However, if the judge had found the IBM lawyers in contempt for failure to turn over the documents, an appeal could have gone on without much problem while the case was still being prepared.

Presently, IBM has a parallel appeal of the ruling pending before the Supreme Court, which now will apparently be the last chance for the firm to either get the ruling overruled, decide to pay the fine or turn over the documents requested by the government.

In the past, the IBM attorneys have called the fine both unprecedented and "savage" as well as "coercive."

It should be noted that these documents are not the same ones on which the special masters in the IBM case last week gave the firm a "clean bill of health" by indicating they were indeed privileged. (Story on Page 27)

L.A. Cuts Power, Not Work Hours

CW West Coast Bureau

LOS ANGELES — In an effort to ease the fuel oil crisis, the city council has approved ordinances cutting use of electricity in the city by 10% to 33%. This measure was passed in lieu of a proposed cut in work hours [CW, Dec. 19].

If those cuts don't do the job, there is a possibility of rolling blackouts throughout the city on or about March 1, according to city officials.

The Association of Data Center Owners and Managers (Adcom) testified against the cuts. It held a strategy meeting last week to seek ways to cope with the crisis.

The initial cutbacks are in two phases. Phase one began last week, and it cuts electricity for 126,000 commercial customers by 20%; 900,000 residential and 11,000 industrial customers by 10%.

Phase two will start Jan. 15, if needed, and it will cut power for commercial uses 33%; residential 12%; and industrial 16%.

Penalties for violation of the reductions are expected to be severe.

Officials noted the Los Angeles power crisis resulted from the Department of Water and Power's reliance on Arab oil for almost half of its fuel supply.

Those 360s Are Power-Less...

(Continued from Page 1)

(50,700 Btus, 16.5 kVAs); 2.7 times the power of a 256K Model 50 (20,400 Btus, 6.5 kVAs); and 2.2 times the power of a Model 50 with 512K (25,000 Btus, 7.5 kVAs).

• A Model 145 with 256K which uses 66,500 Btus and 27 kVAs, uses 1.6 times the kVAs of the 256K Model 65 and 1.3 times the Btus of the 65 with 256K. It is very power-greedy when compared with the Model 50 with 256K in that it uses 4.1 times the kVAs and 3.2 times the Btus in comparison with the Model 50 with 512K. The 145 with 256K is 3.6 times greater in terms of kVAs and 2.6 higher in terms of Btus.

The figures continue to hold true in a comparison of the 370 line versus the 360 line, according to James Benton, CLA executive director. The 360 equipment,

he said, uses significantly less power both for its operation and for its air conditioning (measured in terms of Btus needed).

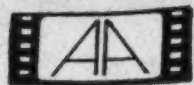
...Maryland Likes

370 to Cut Power Use

BALTIMORE — The State of Maryland has intalled an IBM 370/158 at the data processing center in Annapolis which officials hope will cut back energy consumption without sacrificing services.

State Comptroller Louis L. Goldstein said the 370 "will enable us to cut our power usage by approximately 25%. Because of the expanded capacity and capabilities of this system we will be able to complete the work of the computer center on an 18-hr/day schedule rather than the present 24-hour operation."

When that uncertified tape slips up and pays a \$200,000 dividend, here's a note to your stockholder.



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Very truly yours,

Roger R. Rockbottom,
President



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Security Is More Than Privacy Protection

Aggressive Program Can Increase Center's Efficiency

DP security is a complex, interactive mix of physical, procedural and data protection, with a healthy amount of backup and audit.

The first two parts of this series give an overall look at the security responsibilities of both users and vendors, while future parts will analyze in detail the threat to security and protective measures to minimize security risks.

For years, the overburdened DP manager has been told he needs computer security. He has perceived some obligation to protect owners, employees and customers against a myriad of threats,

both real and imagined.

But being overworked, understaffed, at the mercy of vendors and living in a rapidly changing environment, he has little time to worry about invasions of privacy and security of data. Yet evidence is mounting that many of his operational problems have been caused by a lack of security and that many others can be solved by an aggressive security program.

Can better security result in better management of computer installations? Can it result in a reduction in costs? Can it enhance customer services?

For those who take the time to analyze their real problems, the answer must be yes. Take for example, the countless mistakes that cause reruns, IPLs, recovery to previous versions, inaccurate output and user dissatisfaction.

One of the elements of a data security program is the imposition of controls at interfaces between programming and testing, between data input and operations, between production and test systems and operations and output. These controls should reduce mistakes.

Another element is data authorization to limit access to sensitive or important data. This minimizes the possibility of inadvertent overwriting, mistaken identity or "crashing" of the system.

Security means control. Controls (assuming they are rational) can enhance accuracy. It is not at all strange to consider the terms "security" and "accuracy" to be among the objectives of any computer installation. It is also possible to enhance the installation's "efficiency" objective by means of security programs, in that some measures, such as consistent backup and recovery, can actually save resources.

What does the DP manager need? First, he needs computer systems that provide integrity and security. He also needs to secure his computer installation with a mix of physical security, backup/recovery and procedural controls.

So far, only the latter approach is common.

Peter Browne On Security



At the 1973 National Computer Conference, a spirited dialogue between users and manufacturers highlighted the fact that protection is currently not available in contemporary hardware or software. The vendors have failed us.

But as Dr. John Weil of Honeywell pointed out, the users have been notoriously slow in demanding system protection. Their vendor contacts, RFPs and contractual negotiations have failed to mention a need for security.

Part I: User Responsibilities

Fortunately, both user apathy and vendor negligence are changing. Responsibilities for security are being recognized.

User Responsibilities

What are the user's responsibilities? First there is the responsibility of awareness. This pertains to the user recognition that there really is a need for data security. There are a number of threats that affect an installation. They vary according to location, type of processing, nature of management and other non-technical factors. These threats could be classified as rational (or irrational) intrusion, natural hazards such as fire or storms, data integrity problems and, finally, the common mistake.

If organizations recognize that a systematic approach for reducing hazards is possible, then the next step is to identify the computer security function. This is an

increasingly common phenomenon.

The next major user responsibility is that of risk management. Included in this would be some systematic approach for identifying risks, postulating the costs of disaster or interruption, and deriving the cost/time benefits for reduction of these risks. The basic steps are to analyze the system, classify threats, identify measures to reduce those threats, and choose a common sense mix of prevention and recovery.

Institution of procedural controls is the third responsibility of users. Standards programs, quality assurance and testing, control over changes of software and input/output controls are very important.

The next step is to secure operations. This means a mix of physical, environmental, backup and recovery and personnel security. It is this type of activity that has been postulated as being the only necessary step by a number of physical security consultants. I believe that in today's environment users are far more sophisticated than to look only at this one aspect of data protection.

The fifth major responsibility of a user is to make sure EDP is audited. Concern should be given to proper separation of duties, management responsibilities, security of operations, awareness and risk management with the computer center. The best friend of the DP manager could be the company's internal auditor.

Part II of this series will look at some of the responsibilities of the vendors.

Peter Browne is superintendent, DP Executive Office, State Farm Mutual Automobile Insurance Co., Bloomington, Ill.

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Colorful Story Leads to NCIC 'Hit'

WOODLAWN, Ohio - An alleged would-be robber is seeing red after "failing" to distinguish the primary colors.

When two officers of the police department here were called to a service station recently to investigate a reported robbery, the attendant told one officer he had been held at knife point by two men who fled the scene in a yellow car. He told the other officer the getaway vehicle was red.

Noting the discrepancy in the account of the incident, the police considered

placing a charge of embezzlement.

Using the name and multiple numeric identifiers of the attendant, they queried the National Crime Information Center through the County Law Enforcement Applied Regionally (Clear) system, City of Cincinnati/Hamilton County, Ohio.

They received hits indicating the man was wanted by two law enforcement agencies some 1,200 miles to the south on four charges of robbery. The charges were confirmed and the service station attendant was subsequently held for authorities in the southern state.

TAPE LIBRARY MANAGEMENT

MAGNETIC TAPE WAS THE ORIGINAL HIGH-SPEED MASS STORAGE MEDIUM. IT STILL HAS A SIGNIFICANT PLACE IN THE DATACENTER OF THE 70'S. HERE ARE SOME REASONS WHY MAJOR DATACENTERS ARE CONTROLLING THIS VITAL ELEMENT OF THEIR DATA PROCESSING WITH OUR TAPE LIBRARY MANAGEMENT SYSTEM (TLMS):

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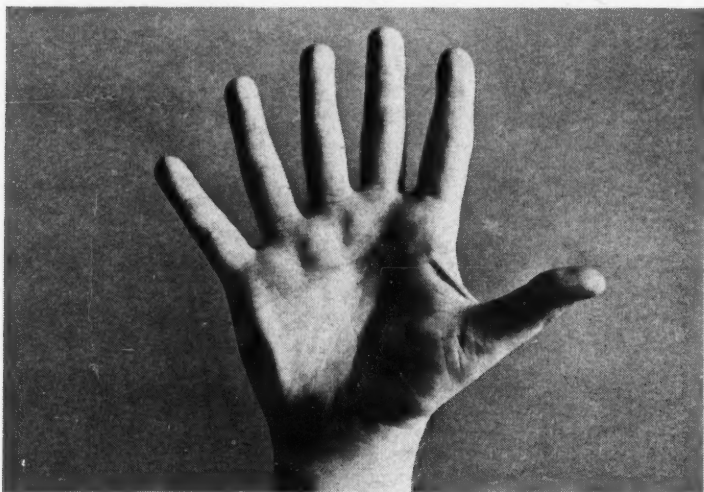
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'Foolproof' Plan Keeps Scofflaws In Tight Check, Handles City DP

Special to Computerworld

MONTREAL — Scofflaws don't get very far in Montreal, where the city's computer system coordinates the collection of fines for motor vehicle violations.

"We recover about 95% of fines for moving or parking violations," said Jean Garipey, project leader for the computerized collection system at the city's data center.

Under the system police officers return information on motor vehicle violations each day at their own stations. The data is validated within a day and then is entered into a Univac 1106 with a Fastrand II drum memory.

Shortly after, the computer center sends a notice to the motorist with the date of the violation, the registration, year, and make of his car, and the time limit for paying the fine.

If a fine on a moving violation isn't paid, the penalty is increased and the computer prints a summons to appear before the Municipal Court. If the motorist still doesn't cooperate, he is "judged by default," and he receives a "notice of judgment," generated by the computer, with a stiffer fine. Finally, the computer may issue a warrant to take the offender into custody.

"We go from the ticket to the summons to the warrant all by computer," Garipey added. "People know they are dealing with a foolproof system so they almost always pay the fine. About 80%, in fact, pay after receiving the first notice."

Garipey pointed out tickets are recorded on the computer very shortly after the violation and the summons, judgment by default, and warrant serve as legal documents verified by the computer's records.

The system, called "Sycom" (System of the Municipal Court) handles about 750,000 parking and 250,000 moving violations per year in Montreal, whose population is about 1.3 million.

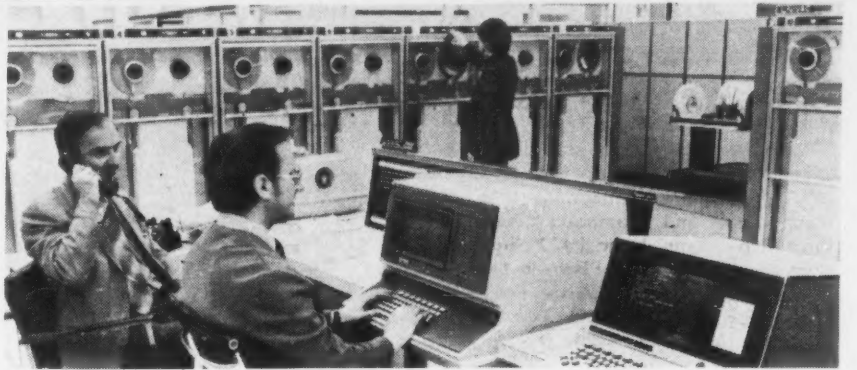
Both the court and the police use Uniscope 100 CRT terminals which can immediately show an individual record, including name, address, dates of tickets, payments of fines and court cases.

The Univac 1106 configuration consists of a CPU with 262K words of main memory, four 8414 disk drives, three 8440 disk drives; a 1782 drum, a Fastrand II drum; 10 Uniscope CRT displays including five communications out-

put printers; communications terminal module controller; 12 Uniservo 8C tape drives; two Univac 9300 CPU subsystems, each with 1,600 line/min printers, 600 card/min reader and 600 line/min printer; and a 600 card/min reader.

While Sycom uses about 15% of the computer's capacity, the 1106 also handles the city and urban community DP needs for some 27 departments. Other applications include:

- Tax billing and collection for about 160,000 owner-occupied properties and 450,000 rented properties. The central computer handles property taxes, water taxes and special taxes (school, etc.).
- Payroll for about 50,000 employees by use of programs which cover contracts with 17 unions, each with its own payroll structure.
- Welfare check printing for and recordkeeping on each recipient.
- Building assessments for the urban



The Nerve Center of Montreal's All-Purpose System

community. This application defines the value of each building, processing over one million records twice a year. It includes both business and private buildings, and informing both the owner and residents of their value.

- Budgetary control by functions, programs, activities and departments. One facet of this system is to aggregate the inputs of various services which are participating in a program. For instance, the subprogram snow removal will correlate inputs from several responsi-

bility centers such as roads, public works, purchases and store departments. This system will allow planning of the municipality's expenditures based on predetermined objectives and priorities. This system will be introduced gradually over a period of several years.

The 1106 was installed early in 1972. Conversion of some 854 programs from a Burroughs 5500 and Burroughs 300 has been completed and the city now plans to increase its processing capacity by upgrading to a Univac 1106 multiprocessor.

GRASP, in use since 1968, is now installed in hundreds of installations. It's the most effective DOS systems software available today. And now, SDI offers a powerful companion package, GRASP/VS.

GRASP/VS is THE spooling system for DOS/VS machines. It runs in virtual storage, uses far less core and disk than POWER, and was designed to run fast and improve performance.

GRASP/VS recognizes that, Virtual Storage notwithstanding, real core is a most valuable commodity. GRASP/VS is not a "real core grabber." It uses a highly sophisticated buffer allocation algorithm which reduces paging

to a statistical minimum. Every DOS/VS user will benefit from GRASP/VS because the real core saved by replacing POWER with GRASP/VS goes directly into the page pool, resulting in an immediate improvement in performance.

Other GRASP/VS features include comprehensive Job Accounting routines which allow internal or external billing of jobs running in a virtual machine, as well as providing reports which monitor paging activity and system capacity.

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Uncertainty Remains

Benson Decision Was Close but Barriers Still High

By Jerry Cohen

Special to Computerworld

Most legal and computer industry sources have claimed the 1972 Supreme Court decision against the Benson-Tabbot software patent was a narrow one, and future software patents might be allowed.

There are fact and possible error in this opinion.

The decision was used as a precedent in denying a software patent in 1973, yet software patents were in fact allowed in the past year.

Thus, the uncertainty that prevailed in the program patent issue is still here, and the Supreme Court's mandate that Congress resolve the issue is still unanswered.

The confident assurances that the 1972

ruling was a narrow one were undercut by several follow-up developments, including a Patent Office review of all program-patent applications, including those already allowed.

The goal was to determine rejectability under the Benson precedent and to resolve doubts against the patent applicants.

In 1973, the Court of Customs and Patent Appeals, which hears appeals of Patent Office rejections, rejected the appeal of Dean M. Christensen of Chicago, denying him a patent for use of a program to determine porosity of subsurface formations in oil prospecting.

Christensen's case had several additional elements which were missing in the Benson case — a specific application of the program and industrial process steps supplementing program operation steps, including drilling holes, setting off explosive charges and measuring parameters.

But these elements weren't enough to clear what should now be recognizable as a high and wide Benson barrier.

The Patent Office cited "prior art" to show that the prospecting process steps were old and refused to consider an equation for getting significant new porosity determinations from the data as defining, together with the other steps, a "patentably" new process.

The court said:

"... [T]he addition of old and necessary steps of establishing variables in the equation cannot convert the unpatentable method to patentable subject matter."

In the wake of the Supreme Court's Benson decision denying patentability to a program, lawyers for the Association of Data Processing Service Organizations (Adapso), who were disappointed by the decision and those for IBM, who had argued for such a result, concurred that the decision was narrow.

The Benson and Christensen cases have no direct conflicts. In Benson a pure program was held to be unpatentable subject matter, but it was implied that an industrial process containing the step, among others, of using process steps according to a formula is patentable subject matter in principle.

The lower federal court agreed in the Christensen ruling.

But there was a countering Catch-22 principle: The evaluation of patentable differentiation over prior art, or "unobviousness" in the patent lawyers' phrase, will be made without attention to the formula as part of the subject matter sought to be patented.

Both the nonstatutory and nonobvious tests were met in another patent appeal case decided last summer, after Christensen.

Kenneth Knowlton's invention of a linked list processor, establishing blocks of storage within a memory and specifying fields within the blocks for storing data signals, was patentable over a reference showing a storage allocator which lacked Knowlton's claimed feature of dividing and recombining storage blocks.

One can make the confident assurance that at least some program inventions will clear the Benson barrier over the next few years. But a realistic view of its height may help low jumpers avoid disappointment.

What Shall We Do Tonight? Let's Ask the Computer

WASHINGTON, D.C. — Computers have helped Americans launch spaceships, build buildings, look for dates or prospective marriage partners, make plane reservations and other time-saving services.

Now computers can even help find people something to do with all the time they saved by using them.

A computerized approach to the problem of coordinating leisure time with avocational activities was unveiled recently by Lawrence Hartlage of the American Psychological Association.

Using a computer programmed to match general interest patterns with appropriate leisure activities, Hartlage reported that employee turnover rates at a press clipping service and a large bank showed marked decreases after administration of the program.

A host of enhancements to DOS ease operational problems, provide improved performance and greater capabilities without the need for additional hardware.

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Editorial

EFTS and the Public

There is continuing reaction to recent developments toward implementation of the Electronic Funds Transfer System (EFTS).

As has occurred with many other systems, large-computer users and consumers appear to be on opposite sides of the issue.

Reaction may be growing now because consumers have read reports of tests of various elements of EFTS, and it is now generally recognized the technology is available to implement a true EFTS system.

All that is needed is public acceptance.

Before we can recommend the move to a checkless or paperless (bankers would have us say "less-paper") society, however, we would like to see more open discussion about the dangers to privacy, the safeguards for accurate records and especially consumer freedom to use or ignore such a system.

Computerworld is by its nature a forum for such open discussion, and for this reason additional viewpoint articles and editorials will be seen in these spaces in 1974.



'I'm Gonna Need a Little Help Out There'

Letters to the Editor

VS Not the Answer — A Short-Lived Technology

I have a great deal of respect for your willingness to voice opinions and to take a stand when it has not always been the most popular one.

Today I too would like to take a stand and ask you and your readers to voice their opinions as well. What prompted me to do this was *Computerworld's* Dec. 5 article on page 15, "IBM VS the World: That's How It Is," which stated that IBM software announcements will force users to go to a virtual environment.

I personally don't feel that virtual systems are the answer in the future. With large main storage not only available, but available at reasonable costs, why isn't it better to compute in a nonpaging environment?

Paging: It forces you to have a larger operating system. (More core, more expense).

It forces you to not only pass data, but to repeatedly pass the program against the data. This is not only complex, but a voracious consumer of CPU cycles.

It forces you to have a larger systems software staff.

It forces you to be tied to whatever algorithm the vendor wishes to supply.

It forces you to equal or degrade your throughput. The stated objective by IBM to the public at virtual announcement time was to *at best equal* throughput of an MVT or MFT environment.

The only two advantages I have ever heard were: It allows you to do more jobs simultaneously, and it allows programmers more flexibility as there is no finite program size constraint.

The first is probably true, but it forces you to buy a faster and more expensive 370 than whatever you were using before.

The latter argument on programmer flexibility I question as I keep hearing about certain Cobol verb restrictions on Branch- or Loop-type instructions which cause inefficient paging. I also understand the smaller the module of code the better paging effectiveness; however, this does not make programming easier. What about the future?

I see two trends which oppose a virtual environment. Main storage will be available in massive quantities and at drastically reduced cost, negating the need to break up storage into small pieces. Secondly, the ability to not only produce micro-circuits but to do so inexpensively will enable multiprocessors under one controller to be rational replacements to multiprogramming.

In summary, I see IBM pushing users to spend millions in training, hardware, software, etc., to convert to a short-lived virtual technology.

Theodore T. Tansi
Vice-President
Data Processing

The Phoenix Companies
Hartford, Conn.

Blackouts, Brownouts... What Kind of Warning?

I would like to comment on the articles concerning the "energy crunch."

I'm sure that all data processing managers are closely watching the energy crisis and preparing for any impact which would affect their installations.

Not only am I concerned with it, but I think the most important questions to be asked are: "What kind of notification will I receive that a blackout is scheduled for my area? Will the electric company give me enough time to perform jobs that are of top priority?"

These are questions to which I believe everyone would like some firm answers.

L.W. Boecker
Supervisor, Data Processing
General Felt Industries, Inc.
Los Angeles, Calif.

Subgroup Within Cube Sought for B700 Users

As a user of Burroughs B700 systems, I am interested in finding others who would be willing to organize a B700 subgroup within Cube — Cooperating Users of Burroughs Equipment. I believe the participants would benefit from the exchange of information which Cube could offer, and encourage them to write Cube at: Burroughs Corp., Second Avenue at Burroughs, Detroit, Mich. 48232; and/or Ed Barkley, KDI Corp., 5721 Dragon Way, Cincinnati, Ohio 45227.

Ed Barkley
Cincinnati, Ohio

Progress? What Progress?

Management science, on a computer, is not my idea of a good sound data processing approach, but a trip into fantasyland. Most of the money spent on these programs is a tremendous waste and also a waste of good talent and, even more important, time.

The computer should act only as a tool and people should have to make more sound decisions.

As a professional with more than 35 years in this industry I believe there are too many amateurs controlling and

manipulating us into believing we are progressing, when I believe we haven't even scratched the surface of the surface.

I am referring to the huge waste of paper going on throughout the industry, when we had the technology and even the hardware to have eliminated this two decades ago. Even today I received a large snapout form from a huge bank with one line of information and my name and address which I believe is an insult to good DP procedure. I think all these practices add inflationary pressures on the economy and should be curbed throughout the industry.

Bob Reinig

San Francisco, Calif.

4 for H.R.J.G. ...

We agree with Herb Grosch's article, "A Carnival of Greed," in the Nov. 28 issue. We hope that H.R.J.G. will be permitted to continue to editorialize on social as well as technical issues.

James L. Gildersleeve
Al Letizia
Robert A. Mackenzie Jr.
B.A. Palumbo

Phoenix, Ariz.

...And One Against

I am prompted to write by your request for reader comment as to whether letters expressing "right-wing" points of view should be suppressed.

Regarding that specific point, perhaps it would be best if both points of view (left and right) were equally represented or perhaps in a ratio corresponding to the number of each type received. (Could the problem be that looking at it from the extreme left you perceive them all to be right?)

I must comment more generally, however, on the brandishing of your opinions on *Computerworld's* editorial page (as you put it). Since your subscription solicitation material trumpets CW as a newspaper devoted to the special interests of the computer industry, I feel your commentary should be restricted to that area.

Editorials on the impact of the energy crisis on computer users are fine but your politically inspired "A Carnival of Greed" piece [CW, Nov. 28] would be more appropriately addressed as a letter to the editor of the *New York Times*.

I, for one, did not subscribe to read your political propaganda and, since your advertising material did not list this bonus, I doubt if many others did either. Please use the space for computer-related material or, in keeping with the "truth in advertising" concepts with which I am

sure you agree, change your ads.

Walter G. Carroll

New York, N.Y.

May I emphasize officially that CW is not "devoted to the special interests of the computer industry"? We are "the newsweekly for the computer community" [italics mine], and it is the special interests of the user that we attempt to serve.

My signed column of highly personal opinion does not expound CW policy. Our editorials do; when I write one I remember, and am careful. HG

VS2 — How Powerful?

The article on the Model 158 and VS2 in the Nov. 21 issue is misleading, particularly the section, excerpted in italics, which addresses running 600 jobs under a VS2-based 158 as opposed to running 200 jobs in the same time frame on a "real" 155. One could falsely conclude that a threefold increase in throughput was achieved simply by converting to VS2.

It is more likely the throughput increase was obtained by rescheduling to increase the availability of TSO, RJE and data base inquiry between 400% and 700% on a daily basis. The article does not state whether the rescheduling was made possible as the result of converting to VS2. This is the key point.

Coincidentally, it would appear that response time degraded after converting to VS2 since another half megabyte of main storage has been ordered by SDC "to give better response time to on-line inquiries."

It is probable that adding this half megabyte to the 155 would have provided the rescheduling capability to increase the availability of on-line services while still maintaining response time. This would have avoided the conversion costs and problems encountered in converting to VS.

As a matter of fact, SDC should examine going back to OS/MVT Hasp on the 158 at 2M bytes since the average 30% faster internal speed of the 158 over the 155 would then be available for SDC problem programs instead of being consumed as VS overhead.

Jerome A. McBride
Director of Technology
Management Horizons Data Systems, Inc.
Columbus, Ohio

SDC's decision met SDC's needs — an ability to handle jobs larger than main memory and to process more time-sharing faster — but SDC's operations manager Nick Corritori admits the choice of operating system depends on a number of factors, some of which are subjective.

Professional Practices

Approving DP Expenditures -- 8 Questions, 10 Rules

By Tom Gilb

Special to Computerworld

Expenditures for EDP equipment and projects spiral mercilessly upwards in spite of technological improvements which should mean lower costs.

Is this really "the price of progress," or does it reflect a development increasingly out of reasonable control? I think it represents the latter.

Here are some of the questions I would ask of an EDP expenditure project if I were the manager responsible for the approval:

1. Has anybody from our organization visited (and fully documented it) any other organization with the same scale and industry problems and with exactly the same "hardware/software" solution as is proposed?

2. If any direct or related costs exceed the budget, or if the time scale for implementation needs extension, who pays? What is the risk estimate of this happening? Will outside suppliers guarantee any risk reduction by contract?

3. To what degree does this proposal, in fact, or to any degree, bind us to any particular set of suppliers or any individual suppliers for a time exceeding the formal contract, due to the costs of extricating ourselves via reprogramming, etc. Is any claim of "easily moving to other suppliers" substantiated by documented examples or by contract

guarantee?

4. Is the contract with the supplier formulated in terms of a payment "per result"? Why not? Who provides results which contribute directly to our institution's annual report, to our balance sheet and to our future plans?

5. The EDP group is responsible for technical achievement of the new programs, the conversion and the productivity of the data processing as clearly stated in the proposal, within the "worst case" limits which they have stated. They are not responsible for the results within the institution of the data which they produce. Line management must formally agree to take that responsibility. Have they?

6. Did we write the contract with the outside supplier, or is it his "standard contract"? Why are we in such a weak bargaining position that we have to swallow such a one-sided "contract"?

7. Have entirely independent consultants (i.e. have not even worked on the evaluation) as well as the "losing suppliers" been given a fair look at the premises and our conclusions? How do they feel about it? Can I see an uncensored one page "counter-argument" from them?

8. Is the project in an evolutionary manner (i.e., so that results start coming early and so that we get feedback to later stages of the project)? We may have "revolutionary" EDP plans,

but won't they be more likely to succeed if they are broken down into a stream of productive checkpoints? I am willing to pay the additional cost of "making sure" it really works.

Management Support

Such questions as these, especially when asked at early

The Professional Practices Page is coordinated by Alan Taylor and the editorial department of Computerworld. Articles should be sent to Alan Taylor, c/o The Professional Practices Page, Computerworld, 797 Washington St., Newton, Mass. 02160.

planning and evaluation stages, will support EDP management in its efforts to be critical and tough with competing suppliers - support them in doing the kind of an evaluation which one can approve without delays and reservations.

These questions are a necessary preliminary if one is really to assume one's management responsibilities for successful EDP development. But then comes the question of evaluating the answers. This is a matter that cannot be delegated, and management must therefore think of its own posture in trying to establish whom to believe. Too little has been said of management principles which can be

used to assist matters here.

10 Basic Rules for Non-Experts

1. All EDP results come from result-oriented planning, or lack of it.

2. You can safely assume that EDP experts are wrong - the burden of proof is theirs.

3. You can rely more on the EDP expert who is himself willing to take a responsibility for the results he promises you.

4. Computers cannot contribute to your organization's success any more than pencils or adding machines; only human beings can do it, the right people organized by the right people.

Viewpoint

5. Computers cannot solve any problems - only people can.

6. There is no scientific basis for "computer science" or "software engineering." These two concepts exist primarily as a future challenge.

7. The non-expert manager should take it for granted that "experts" know enough to be able to communicate to him in a non-technical language. If they cannot do so, then it is reasonable to assume they are not expert.

8. Organizations with really successful EDP applications keep silent, with good competitive

reason. Those who fail keep silent, too, with equally good reasons. The result is that EDP and management publications and conferences contain material from sources who are unable, on the basis of genuine experience, to tell us how they succeeded, or how we can avoid their mistakes.

9. The three critical decision-making areas for a successful computer application are system development, computer selection and organizational development.

If the organizational development can be mastered, then you don't really need the EDP-oriented software and hardware phases mentioned, for management control purposes. If you really can't master organizational development and control, then the EDP development and acquisition will probably be ineffective, too. In other words, don't let EDP as a delaying tactic replace sound management practices.

10. You will get complete control over EDP development in your organization by making effective use of conventional management planning and control techniques. EDP only becomes an exceptional problem when we treat it exceptionally.

Tom Gilb is an independent DP consultant and past president of the Norwegian Computer Society (©1973 by T. Gilb. Quoted by permission).

Here's a Professional Solution to Unreliable Output

Data processing is causing a revolution. Along with many benefits, the computer revolution has brought many disruptive effects - not the least of which is the current distrust of computers which exists in innumerable households and businesses throughout the country.

This distrust comes from the fact that computer output has been in the past sufficiently unreliable - for many different reasons - so that no one is surprised by the errors or even seems to think that a computer system producing unreliable output is worth worrying about.

In earlier articles, the problem of unreliable output has been singled out as the main bar to the development of DP into a recognized profession.

However, recognition of the problem does not solve the key question for data processors. Problem recognition should not be confused with problem solution, although the two must certainly be related, and a solution offered before the problem is identified will be inevitably suspect.

Authoritarian Solution

One possible solution would be to obtain reliability by professional fiat:

The Taylor Report
By
Alan Taylor, CDP

"The output produced by your computers in November 1973 included the statement that the attitude codes 1, 2 and 3 meant that the student was 'unsatisfactory,' 'below average' and 'average' respectively. In fact, the school was using the codes to indicate 'below average,' 'average' and 'above average.' Therefore... your computer installation is hereby found to have produced unprofessional output, and so to be unprofessional."

This might be the wording of a data processor's excommunication from some august Data Processing Code of Conduct Committee.

On the surface, such a decision could even be justified.

The issuing of such incorrect grades (which really did occur, incidentally) could even have been noticed in the DP center itself. Mathematically, if there are students who are "unsatisfactory," "below average" and "average," then there must also be students who are "above average." The computer center was expecting such students to be coded 4. However, when they failed to receive any "4" codes on the input for over a year, they still did not query the input.

Ignorance No Excuse

The hypothetical Data Processing Code of Conduct Committee could easily have demonstrated that such a mathematical check could have been programmed into the input editing routines, or that the school could have been asked to certify with each

batch of input that it did match the report card being used. Thus, the committee could argue that any ignorance on the part of the DP center of the change by the school in the meaning of the behavior codes was avoidable, and therefore not relevant to its decisions.

It could be done, and perhaps it might solve the problem of unreliable output.

But the cure could be worse than the disease, just as the cure of Prohibition, as a way to reduce the number of drunks, was worse than the problems of coping with the drunks.

There is an alternative which must be considered, one which comes from outside the DP area, but which seems to be as relevant to the proper handling of the societal disruptions of the computer revolution as it was to the disruptions which occur when a racially mixed town has its schools forcibly integrated.

In the latter situation moral leadership and guidance were given by the late Richard Cardinal Cushing of Boston. He called for "professional competence and enlightened leadership" to help head off the inevitable disruptions. He did not call for automatic obedience to professional educators - merely for general competence by educationalists. Nor did he call for the acceptance of either newly created "expert" goals, or for the retention of the old goals. Instead, he called for "enlightened leadership."

How would this differ from the arbitrary approach of the Data Processing Code of Conduct?

How would competence and leadership deal with the case of the school grade error coding, other than drumming the data processor concerned out of the community, or else admitting that nothing had happened involving data processors?

As I see it, such a body could decide that since an avoidable error in computer output had occurred, then all known data processors should be warned about both the same type of danger - and about recommended methods to avoid it.

This could be done quite cheaply through various trade and professional journals. Then, the Data Processing Committee would later be able to expect people to take known precautions against knowable errors - a much more reasonable approach than either simply saying all unreliable items are proof of professional unsuitability, or saying that because the user may have contributed to the unreli-

able output therefore the data processor has no responsibility to set matters straight.

Naturally, such a middle-ground approach would be assisted by the publication of error problem areas, propaganda about how easy it can be to plan to detect and prevent errors, training of future managers in error detection, and even in the profitable art of using detected errors to improve overall service and efficiency.

These actions would really help - more than Draconian methods to remedy the problem, and it is my opinion that DP professionalism demands some remedy to the current plague of unreliable computer output.

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Letters to the Editor

Head Not in Sand

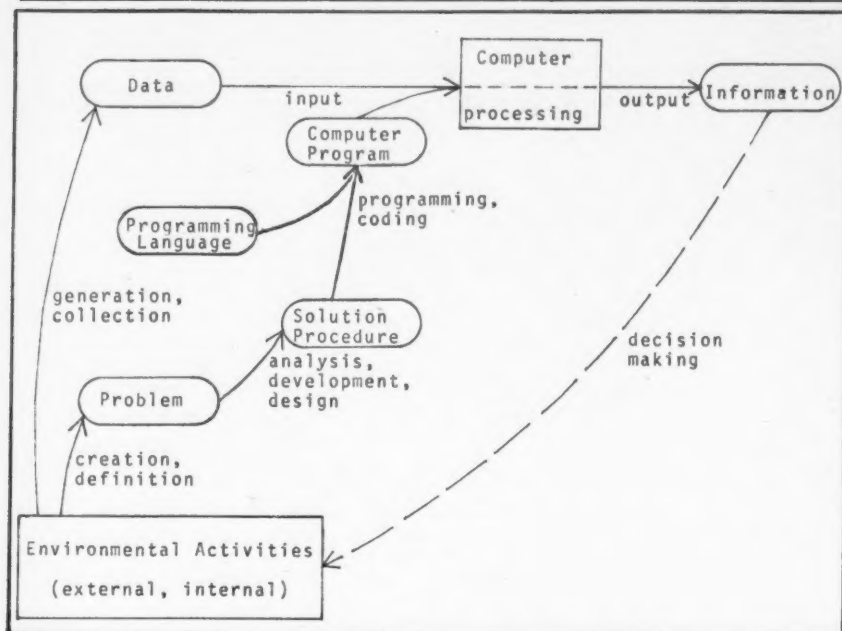
The Nov. 28 lead article unfairly casts this company as lead ostrich in the energy crisis drama. A special bulletin distributed to all employees shows how responsive we have been.

What the reporter asked me was whether we have installed, ordered or considered in-house generating capacity as a response to the threat of power shortage. My answers were no, no, yes.

Robert E. Nelson

Reader's Digest DP Director Pleasantville, N.Y.

Mindful of the special interests of Computerworld's readers, our reporters were primarily interested in management actions in the energy crisis, but at the data center level. That is, what were computer users doing differently from general management, from corporate attorneys, from executive-level personnel? It is in this regard that we found a number of users who had not done sufficient thinking. EB



Another View of the DP Profession

A New Name for DP Profession!

By Jarrell C. Grout

Special to Computerworld

Data processing, computer science, electronic data processing, computing and information science and computer engineering. These terms represent a portion of the many names suggested for, and used to identify, a seemingly mysterious profession.

Although some state that ours is not a profession nor is there any such thing as a computer professional, a computer profession does in fact exist.

I encourage those who believe otherwise to realize that those alert enough to recognize the potential of the computer have created a set of occupations requiring advanced training and mental acuity — professional positions — which, combined with the computer, have far-reaching effects on all society.

I feel that our profession should be referred to by the term "Computer Information Processing" — or CIP, for the acronym lovers.

The elements and activities of our pro-

fession may be depicted in the adjoining diagram.

The diagram is relatively self-explanatory. However, convention dictates that while "a picture is worth a thousand words," the addition of a few words may help clarify the way in which it represents our profession — CIP.

Environmental Activities, whether organizationally outside or inside a CIP group, represent the sources of Problems and Data — closely related entities within themselves. Clearly, CIP is concerned with both of these elements.

Following creation and definition, a problem undergoes analysis. Then development and design activities result in specification of a Solution Procedure. Solution procedure specifications may vary from simple and concise to complex and detailed, depending on the level of problem intricacy. A well-specified solution procedure will contain algorithms (and perhaps, heuristics), associated flowcharts and other communication aids.

With properly formulated solution procedure specifications, programmers knowledgeable in a Programming Language can write a Computer Program which can then be placed in computer-processible form.

While a computer program may remain constant for a particular type of problem, the Data can certainly vary. Data can be defined as facts pertinent to a situation — with the implication that some form of organization of facts is necessary before the solution to the problem becomes evident. These facts can also be reduced to computer-processible form.

Attention is now directed toward the Computer — the device which, by its very existence, allows our profession to be a reality. The computer, under direction of the instructions, transforms data into output which can be referred to as Information — data organized in such a manner that the solution to the problem may be realized.

Information, by this definition, can be used for decision-making, which, in turn, affects the environmental activities — the initial "creators" of problems and data. Information thus formulated may be used in developing, or causing recognition of, additional data to be computer-processed by the original program.

Often, it may result in causing those involved in the environmental activities to recognize new problems and, in effect, a cyclical situation may result. Thus the diagram representing the elements and activities of our profession, is shown to be cyclical in nature.

Clearly, the diagram is simplified because it does not reflect all of the basic components of our profession. Yet it is definitive, and exemplifies our profession in that (1) the Computer is the essential device, (2) Information is the desired result, and by its very nature, is also the major resource for our professional activities, and (3) Processing, performed by the professionals and the computer, is the action utilized to obtain the desired result.

Computer Information Processing is our profession — and its data, scientific, electronic, computing, engineering and other facets are exemplified by the term. If we can accept the term on a CIP-universal basis, the problem of naming our profession will be eliminated and the elements and activities of our profession will be well-defined.

We can then together proceed toward the important and urgent problems of gaining wide-spread recognition as a profession; establishing improved certification (and licensing, if necessary) criteria for our profession; and developing methods by which the meaning, purpose, usefulness and importance of our work may be promulgated to the masses.

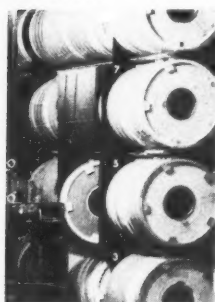
Grout is associate professor and head of the department of computer science at Stephen F. Austin State University, Texas.

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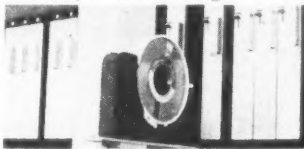
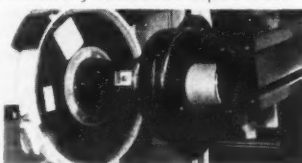
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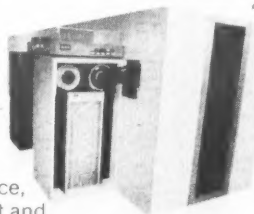
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NBS Package Aids Metric Use

WASHINGTON, D.C. — Manufacturers can begin the perhaps inevitable process of familiarizing their staffs with metric measurements, with the help of a Fortran-based program that converts metric units on engineering drawings to their U.S. Customary equivalents.

The program, compact enough to fit in most minicomputers, was developed by Caterpillar Tractor Co. which then gave it to the National Bureau of Standards for distribution. The bureau is now validating the program logic, and a package including source code, documentation and test problems should be available early next year.

Conversion to metric measurement has not yet been formalized as U.S. policy, a bureau spokesman admitted, but many companies are beginning to move on their own. Caterpillar developed this program, for example, because it produces all new drawings for new products in metric units.

The program converts all specific numerical metric quantities appearing on the drawing to their U.S. Customary (inches, feet, etc.) equivalents and prints a table of the paired measures on the drawing.

Caterpillar uses the converted values largely for administrative purposes but either set of values on the drawing may be used to make satisfactory parts, NBS said. Inch conversions are rounded to one more place than the millimeter dimensions, but with a minimum of three places. This results, according to the bureau, in a maximum difference of .0005 in. between the millimeter and inch values.

In addition to distributing the current metric-to-Customary program (for "about \$500"), the bureau is interested in supplementing the package with a program that would "go the other way" from U.S. Customary to metric measure.

Information about existing U.S.-metric routines that could be made available for public distribution, and requests for the current metric-U.S. conversion package should be addressed to the director, Institute of Computer Sciences and Technology, NBS, 20234.

Mixed-Vendor Software Support Keeps DOS/360 User Happy

By Don Leavitt
Of the CW Staff

GRAND RAPIDS, Mich. — DOS/360 is still a good environment in which to work, but there are areas in which the IBM-supplied operating system needs the help of outside vendors to be truly effective, according to Tom Bobrowski.

Manager of systems and programming for the Old Kent Bank and Trust Co., Bobrowski is proud of the work the 15 technicians on his staff have done in some 30 application areas, supporting 40 branches in a full line of banking services.

He is also pleased that once they saw the value of spooling output for low-speed peripherals, the staff developed its own core-buffering routines rather than relying on any of the commercially-available spoolers. Old Kent has turned to outside vendors, however, for support in job scheduling, performance measurement, job accounting, file access methods and telecommunications control.

Several software houses are represented at the bank and the mixed-vendor approach carries over into hardware as well. Old Kent has a 360/40 with 256K bytes of memory, half of which is from Ampex, and a 360/50 with 512K bytes, all IBM. These CPUs share a pool of Ampex disk drives, including a dozen or

work spilled into first-shift time.

The scheduler includes an on-going capture operation that maintains a data base of job run times, resources used and prerequisite conditions. This supports the generation of the proposed daily schedule and later produces reports comparing actual to expected performance.

Another feature of the Value Computing system, Bobrowski noted, is the production of job accounting data so that each user department "knows" what its work costs.

Old Kent uses the Amigos file access methods principally with its on-line operations which include both audio-response and interactive CRT inquiries. Amigos is a replacement for IBM's Indexed Sequential Access Method (Isam).

The Boss monitor has given added support to the multiprogramming operations which Bobrowski said the bank has been able to implement more and more as the overall scheduling program has shown how partitions can be used more effectively.

The application programs written by the bank's staff are "about 50% BAL and 50% Cobol," the manager noted, with all new work being done in Cobol. The bank is moving toward the high-level language, he explained, in order to keep its options open for future system upgrades. The bank's philosophy, however, is to stay with the 360s — and DOS — as long as that seems practical, he said.

User Casebook

more double-density and four conventional 2314-type units.

The installed software includes Value Computing's Scheduler and Control System, Compress, Inc.'s Amigos file access package, and the Boss telecommunications monitor from Automated Financial Systems. That combination, along with DOS, made Bobrowski discount any serious consideration of moving "up" to OS in the foreseeable future.

The bank operates around the clock, five-and-a-half days a week. The Value Computing scheduler has been completely functional for about 10 months, and Bobrowski said he is enthusiastic about the way it has identified gaps that used to be in the operations schedules.

Initially there was the "normal range of problems with operators who resented the machine telling them what to do," he admitted, but added that the bank has "significantly reduced" the amount of shift-overrun it used to have, when third-shift

System Performance Reports Explained And Corrections Suggested by 'Alert'

ROCKVILLE, Md. — OS/360/370 users, frustrated till now by hard-to-read output from performance measurement tools, have an alternative management-oriented means of tuning their systems with the help of the Alert performance analyzer from Compress, Inc.

The new software package works with SMF data, enhanced somewhat by new hooks into the operating system, and produces a series of reports tailored to user parameters to pinpoint bottlenecks at the system, program or data set level.

The Alert reports are designed to maximize throughput and minimize hardware requirements. The parameters allow the user to define the area of interest he wants studied, the threshold levels he deems worth reporting within that general area and the maximum number of situations beyond that threshold to be reported regardless of how many actually occurred.

With those dimensions available, Compress felt the user would not be overwhelmed by massive printouts that were repetitive or not particularly relevant to the system tuning effort.

Nor would the user feel swamped by vast tables of data presented on conventional, line printer stock paper. The Alert reports are prepared in 8-1/2 in. x 11 in. format and include narrative text explaining the significance of the feature being highlighted in each report. The narrations also cover specific corrective action recommendations.

The recommendations are one feature that sets Alert apart from other measurement tools, Compress said, but so is the availability of a whole set of reports dealing strictly with analysis of the user's disk space allocations and blocking factors on tape.

While the narrative is seen as very useful to the non-DP-oriented corporate manager trying

to get a feel for what is happening in his computer installation, it may also be repetitious for the professional computer performance evaluation team. So Alert includes a facility to skip the textual printout when it is not wanted.

Other aids to the non-DP oriented user are a title page and index that Alert generates at the beginning, and a glossary of terms the system puts at the end of each analysis run.

Alert is designed to run on Model 50 or larger 360s, and on Model 145 or larger 370s, under OS/360 Release 21, OS/VS1 or OS/VS2 Release 1. It requires 3K to 4K bytes of resident core within the operating system while applications are being studied, and a region of 120K bytes for later data reduction and reporting.

The Alert package including installation support is available for \$11,000 from Two Research Court, 20850.

Xerox 530 to Get Cobol

EL SEGUNDO, Calif. — Cobol compatible with the proposed ANS standard will be available for users of the 530 minicomputer in the third quarter of 1974, according to a Xerox spokesman.

In combination with the previously announced Fortran IV and RPG II capabilities, the new Cobol will make the 530 one of the best 16-bit machines for business DP, the company added.

The Xerox 530 Cobol will include modules supporting sequential, relative and indexed

I/O; table handling; library operations (the COPY function); debugging and interprogram communication, the spokesman said, in addition to a number of tools to minimize time required to develop programs.

The package will also accept and process, without alteration, files created by Xerox 530 disk sort and Xerox 530 RPG II. It will process "with minimum effort" files created by IBM 1130 and IBM System/3 ANS Cobol and RPG II, Xerox said.

The Cobol package will be distributed free to all 530 users.



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Conference to Offer Workshops, Papers on Simulation Techniques

WASHINGTON, D.C. — Detailed descriptions of techniques for modeling computer systems and user experience with these techniques will be featured in the Winter Simulation Conference to be held here in mid-January.

Sponsored by a consortium of professional societies, the conference will run from Jan. 14-16 at the Washington Hilton. It will include formal presentations of papers, workshops keyed to discussion between moderator and audience, and tutorials on the subtleties of individual simulation languages.

Programmers and others interested in finding out more about the basics of simulation might well attend the Spouse's Program since it will include, on both Monday and Tuesday mornings, a two-hour introduction to the subject.

Keynote

Keynote speaker Monday morning will be Congressman Jack Brooks, author of the Brooks Bill that structured responsibility for computer management throughout the Federal Government and led to the organization, a year-and-a-half ago, of the Federal Computer Performance Evaluation and Simulation Center (Fed-sim).

The conference itself is to be run as a series of five concurrent, three-hour sessions with the workshops and language tutorials running parallel to the paper presentations.

The overlapping means, for example, that DP technicians will have to choose, on Monday morning, between a session on simulation languages chaired by Paul Roth of the National Bureau of Standards and a session on data base/data communication moderated by Prof. Howard Morgan of the Wharton School, Univer-

sity of Pennsylvania.

After a luncheon talk by Jules Bergman, science editor for ABC, the afternoon will include a session on computer hardware, with Allan Pomerantz of Fed-sim as moderator. Tuesday morning's schedule includes a session on computer software, to be run by Ray Merikallio of IBM.

Computer job scheduling will be covered in five papers to be presented Wednesday morning in a session chaired by Leo J. Boelhouwer of the New York City Police Department.

Languages to be covered in the special tutorials include Simscript (Monday afternoon), Simpl/1 (Tuesday morning), Gasp IV and GPSS (Tuesday afternoon), and APL, along with a repeat on GPSS (Wednesday morning).

Other sessions deal with a wide range of application areas in which simulation can play a part. The workshops also tend to focus on these broader areas of interest, noted conference general chairman Michael Morris, program development officer at Fed-sim.

The 1974 Winter Simulation Conference is being sponsored by the American Institute of Industrial Engineers, the Association for Computing Machinery (ACM), the Institute of Electrical and Electronics Engineers and IBM's Share users group. Other sponsors include the Operations Research Society of America, the Society for Computer Simulation (Simulation Councils, Inc.) and the Institute of Management Sciences.

Fee for regular attendees is \$70 in-advance, or \$90 at the conference. Registrations and information about special fees for students and spouses are available from Fred Silver, '74 WSC Registration, Compress Inc., Two Research Court, Rockville, Md., 20850.

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Learn What You Need to Know About Contracting for Computers and EDP Support Services-In One Hard Lesson

A two-and-a-half-day seminar that can help you protect your EDP investment — and your system.

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- How to reach an agreement that protects the security of confidential data.
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You'll also receive a valuable reference notebook which will back up the information you'll receive at this meeting. The notebook will include sample vendor contract forms.

Roy N. Freed, a leader in this field.

Roy Freed has specialized in computer-related legal matters for many years. He has served as inside counsel for a major manufacturer of digital computers, and is currently engaged in private practice with the Boston firm of Peabody, Brown, Rowley & Storey. He has authored many articles on the various legal aspects of computers — including "Computer Frauds — A Management Trap" (*Business Horizons*) and a reference book entitled "Materials and Cases on Computers and Law." Mr. Freed will personally conduct the entire seminar.

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costly and disruptive they can be. This seminar can help you get what you want when you want it. It will help your company, your industry and you!

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We've scheduled three seminars during the first part of 1974 as follows:

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Mar. 13 - 15 Regency Chicago

Hyatt O'Hare

May 22 - 24 St. Francis San Francisco

Total cost for the entire seminar, including the complete resource notebook, continental breakfasts, lunches and coffee breaks, is \$295.00. Hotel rooms, if required, are not included. Enrollment must be strictly limited, so

that Mr. Freed can provide personal attention to each participant. So don't wait too long to make your reservations. Fill out the coupon, and send it in as soon as possible.

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The day Sweetheart Bakeries had a big run on cupcakes.

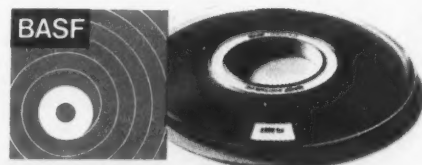
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When it's BASF...you know it's not the tape that goofed.

Net Now Reaches 14 Cities

Dallas User Eyes High-Speed MCI Link

By Ronald A. Frank
Of the CW Staff

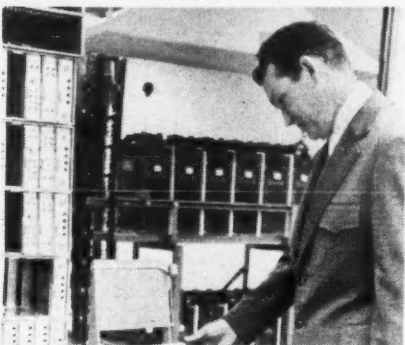
DALLAS — MCI Telecommunications Corp. has added Dallas to its growing communications network which now reaches 14 cities.

As the first administrative message was printed out on a teletypewriter at the network's Dallas regional terminal, the specialized carrier was completing final plans to connect at least five data communications users to the MCI network.

One of the first data users is expected to be Computer Dimensions, Inc. which will use an MCI circuit between Dallas and its multiplexer site in Detroit.

Computer Dimensions will begin running 9,600 bit/sec data on the link as soon as it is available, according to Robert Smith, operations manager. The MCI circuit, a single voice-grade line, will be a test for the company, Smith said, and if the results are "as good as or better" than the present Bell System facilities, Computer Dimensions will probably order additional facilities from MCI.

Smith said he expects MCI service to



Bob Smith, operations manager at Computer Dimensions, shows how 9,600 bit/sec circuits can be switched to dial back-up.

Timeplex Adds Modem

NORWOOD, N.J. — Timeplex, Inc. has introduced a Bell 202-compatible modem which eliminates foldover distortion that occurs in modulating a carrier at very high data rates, according to the firm.

This improvement allows transmission over unconditioned dial-up lines 50% faster than with comparable Bell units, a spokesman said.

The "202-Compatible Modem System" can transmit at 1,800 bit/sec on dial-up lines, a spokesman noted, compared with Bell's 1,200 bit/sec figure.

The unit is offered with field-installable options for conversion to private-line service or for synchronous mode use, the firm stated.

The modem costs \$350 with delivery in 30 days from the firm at 65 Oak St., 07648.

Attraction Is Strong, but So Is Risk

DALLAS — Like any specialized carrier user, Bob Smith realizes there was some risk associated with signing up for an MCI line.

"We have good relationships with Southwestern Bell, and I want to keep it that way," the Computer Dimensions operations manager said.

If Bell does not provide his Dallas/MCI local loops as scheduled, Smith knows he will essentially be caught in a dispute between two carriers. He hopes that won't happen.

But the attraction of MCI is strong. He estimates Computer Dimensions can save as much as \$300/mo per line by switching to MCI.

In addition, MCI is ready to upgrade his line from 9,600 bit/sec to 19.2

kbit/sec when the data traffic increases. MCI will provide the higher speed by adding a second pair of Codex 9,600 bit/sec modems and a second voice-grade line to his circuit, along with two Codex "Biplexers."

The 19.2 kbit service is available from AT&T only as part of Bell's wideband offerings. The Codex modems cost \$265/mo each and the biplexer is \$165/mo.

As a user, Smith looks objectively at both the existing and specialized carriers. But he recognizes that without the advent of the new carriers, Bell might not have offered many of the newer options and services that are now available to data users from local phone companies.

begin shortly, adding that one of the few remaining requirements is for Southwestern Bell to supply the necessary local loops. On the Detroit end of his MCI link, the local loops are already in place, Smith said.

Computer Dimensions plans to keep its Bell link side-by-side with MCI's "for at least 30 days," Smith said, until he is satisfied with the reliability of the MCI line.

Important Link

The Detroit to Dallas route is an important part of the Computer Dimensions national data network. Data from up to 40 low-speed data customers as far east as New York comes into Detroit, where the firm has a General DataComm time-division multiplexer. The combined data stream is transmitted to the Dallas DP center at 9,600 bit/sec using Codex modems.

Smith said he has been satisfied with the performance of the Codex modems, and he is especially pleased with the dial back-up capability of the data sets. When the existing Bell 3002 voice-grade line goes down, the Codex modems are switched to a dial facility through a DAA.

Computer Dimensions has transmitted data up to "about an hour at 9,600 bit/sec on dial-up lines without major problems, Smith said. "But sometimes we have to dial a second time when the first connection sounds extra noisy," he explained.

The Computer Dimensions network handles a variety of applications, some of which are turnkey services provided by the firm to its DP customers. The company relies on its 360/65 in Los Angeles to process data that is transmitted from as far away as the East Coast.

Among its customers, Computer Dimensions serves beverage distributors, credit

unions in Michigan, and a network of teletypewriter users who share some of the line capacity. One of the major applications is an auto parts inventory system. This service provides car dealers with inventory control for replacement parts.

Because Computer Dimensions provides services to customers with its data network, reliability is important and long outages cannot be tolerated. In this regard, Smith is interested in MCI's redundant local loop offering. This allows the user to get a second (or back-up) set of local loops at less than the cost of a local loop from Bell.

Under this set-up, the second local loop cannot be used regularly and must be held in reserve until the primary local loop goes down. The local loop has always been a vulnerable part of a specialized carrier link because only the phone company can do the repair and maintenance.

RCA Terminals 'Custom Tailored'

VAN NUYS, Calif. — RCA has introduced two intelligent terminals for custom-tailored, specialty applications.

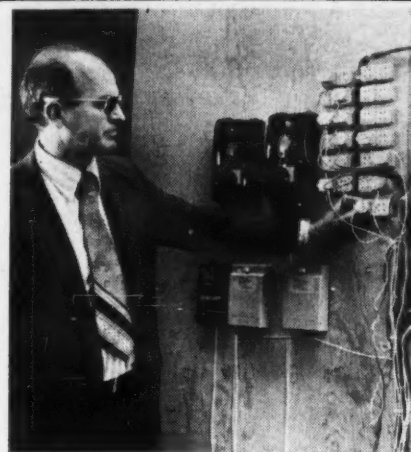
Called the Flexiterm line, the two stand-alone terminals are programmable through module replacement.

The Flexiterm Model II, intended for interactive applications, offers IBM 3275 emulation and line discipline-compatibility, according to a spokesman. The unit has a 960- or 1,920 char. CRT screen.

The Flexiterm Model III, intended more for data collection use in specialty applications, has a 5-in. CRT, a built-in printer and an optional credit card reader.

Either unit can accommodate a function-type or standard typewriter keyboard, the spokesman noted.

The RCA-built microprocessor has a



CW Photos by Ronald A. Frank

John Fleeman, MCI customer service manager, checks first message being received at the Dallas regional terminal.

nance.

The user first informs his specialized carrier of a local loop problem and the specialized carrier then has to call the phone company. Often this process is time-consuming and MCI feels the second loop feature will help.

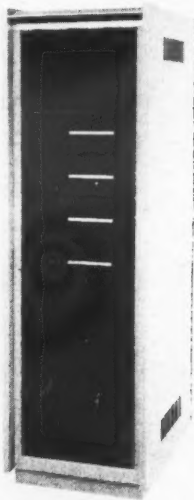
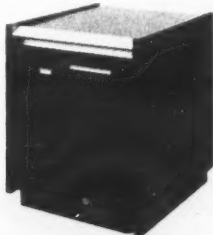
Trouble-Reporting System

While Smith is anxious to begin his MCI service, he admitted the reliability of a line is a hard thing to measure. After years of experience with military data communications systems, Smith has implemented an efficient trouble-reporting system on the Computer Dimensions network.

Using old Model 14 TTYs (which have strip printer output) all network administrative messages concerning outages, line problems, etc., are printed out. The tape from the strip printers is reviewed each week by Smith. He transforms the important items, together with critical data such as time of day and duration of the problem, into a permanent performance record. He will rely on this same system to evaluate the MCI line.

It's only natural that the leader in computer terminals and data communications equipment would offer a multiple modem system as advanced, yet as simple to maintain as the Series 12.

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Centralization Brings State Colleges Closer Together

By Patrick Ward
Of the CW Staff

BOSTON - Remote batch job entry equipment (RJE), Model 33 ASRs and CRTs, all accessing a CDC Cyber 72 in Boston, will replace the present in-house CPUs at the 11 Massachusetts state colleges next fall.

The decision to go to a central college computing facility using teleprocessing was made after weighing the alternatives of a totally decentralized system or a distributed net with small machines at the campuses and a smaller central site, according to Leo Roomets, director of computer services for the new network.

Plotting out the five-year cost picture for each approach showed that centralization was least expensive, Roomets said. This alternative provided the greatest ease of systems design work and reduced the amount of duplication of effort at the colleges, he added.

The decision to go with CDC was based on teleprocessing capability, Roomets stated, "because we anticipate a growth curve in the number of terminals and CDC was able to best demonstrate the ability to handle a large number of interactive terminals."

The 65K Cyber 72 has four 844 disk drives with 115 M bytes each, and four tape drives.

The colleges use CDC 731s as remote batch job entry systems and primarily use Model 33 ASRs for interactive work and Tektronix CRTs for administrative duties.

The CDC 731s handle the students' Cobol programs, for example, but also provide printed reports, class rosters and other output requested from CRTs in the administrative offices.

The CRTs are used for inquiry and updating of files, and the Model 33s for programming in Basic and Fortran, as well as accessing a software library.

Roomets does not think centralization will bring an immediate DP budget reduction for the state college system but in the long term he expects it will hold down a growth curve in costs.

Hardware is totally installed and running and the colleges are now in the conversion stage, having been given one year to complete the transition, at which

time their superfluous equipment will be eliminated. Target date for fully centralized operation is the fall of 1974, according to Roomets.

More Capability Needed

While cost was a strong reason for implementing the system, another was that the separate campuses themselves could not have supported large enough systems to do all the things they're able to do now in terms of data base systems, various software packages and things of that nature, Roomets emphasized.

The central computing facility

is in downtown Boston. This site was chosen for its cost advantages, Roomets said.

Transmission is over the Massachusetts state Centrex network, which has its termination point in Boston, combined with a Telpak rate.

The CDC 731s send data at 4,800 bit/sec, the CRTs at 300 bit/sec and the Model 33s at 110 bit/sec, Roomets said.

Bell 208E modems are used for the RJE's, and Bell 113Bs for the low-speed units.

The state colleges are from five to 120 miles from the central facility. They share a total en-

rollment of 33,000, ranging from under 1,000 to 5,500.

Five of 11 colleges had machines on the order of IBM 1130s, IBM 360/20s or NCR 50s. These are running parallel with the equipment for the centralized facility, but are due to be taken out of service by next fall.

Service Bureaus Used

The other six colleges were using either unit-record equipment or some combination of unit-record equipment and local service bureaus, Roomets stated. Some colleges used PDP-8 systems for low-volume instruc-

tional processing, he added.

The new system has facilitated instructional use, Roomets said. "Students have better access, and access to a much larger library of software, and they have several interactive languages to play with as opposed to just one."

In terms of cost, the Massachusetts state colleges spent a total of \$800,000 to \$900,000 on data processing in the 1972 academic year. Roomets predicts a \$1.2 million budget for 1974, the first year of complete centralization, and from there he sees the budget peaking at \$1.8 million in 1980.

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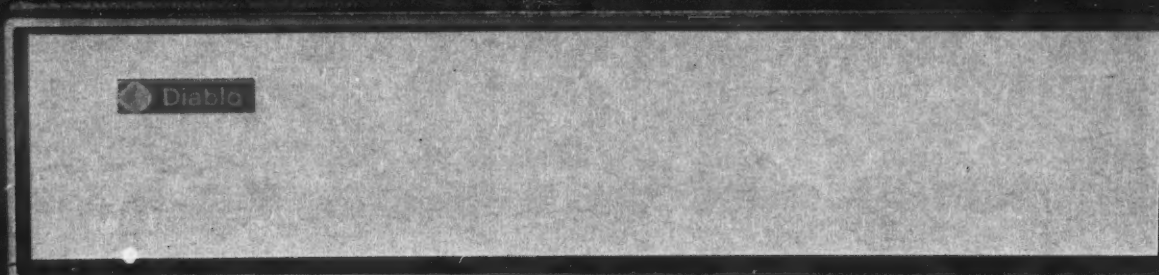
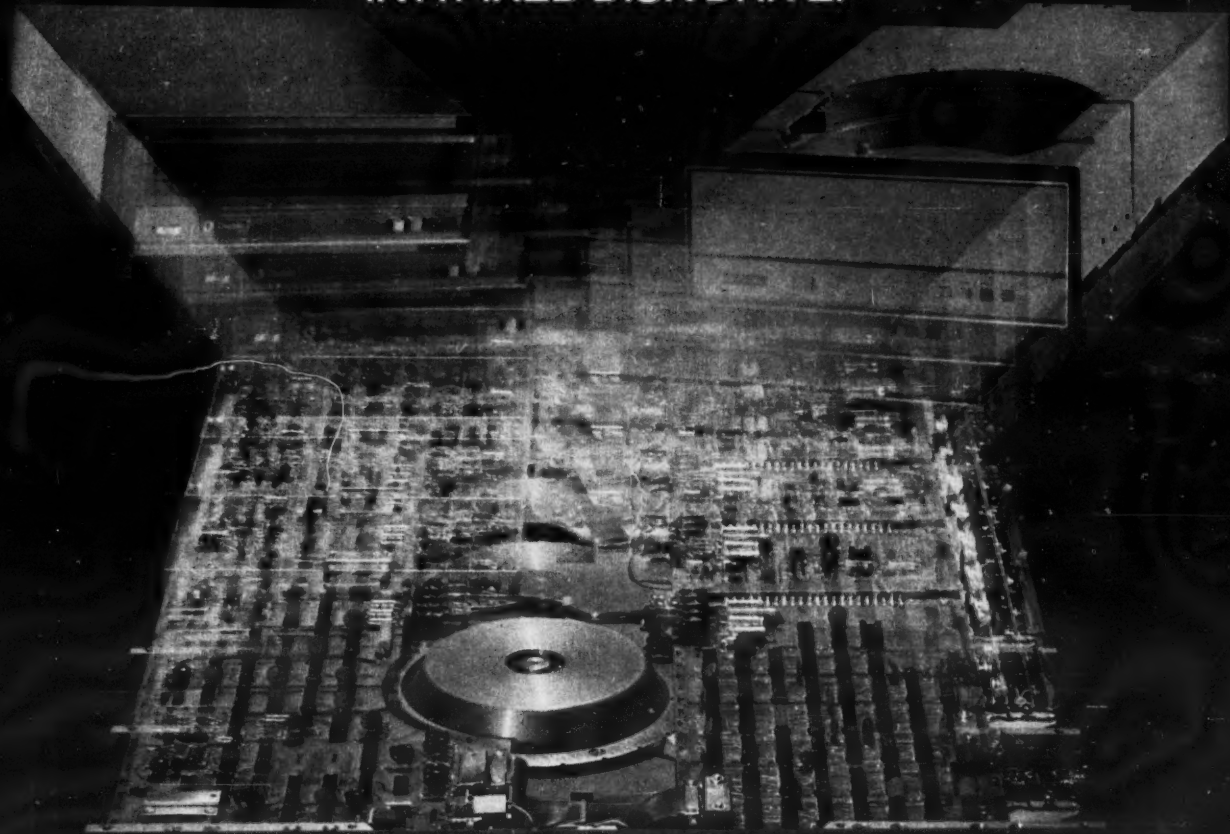
powerful performance features: 24 million bit capacity, 100 tracks per inch, 2200 bits per inch. Power consumption is less than 150 watts. Only DC power is used, which means Series 20 drives can operate anywhere in the world without modification. For more information on the new Series 20 fixed disk

drives, call or write Diablo Systems, Incorporated, 24500 Industrial Boulevard, Hayward, California 94545, (415) 783-3910.

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Bits & Pieces

OS Instructions Displayed at Peripherals

Keeping control of which tapes go on which drives and which forms go on which printers can be a hassle even in small OS-based computer centers, but two systems from two different companies promise to solve the dilemma.

Almost identical in methods of operation, both systems mount a small display on the peripheral to call out tape changes, form changes and even disk changes where and when required on each peripheral. Operator action is keyed to brightly flashing lights at the peripherals themselves.

Designed for use with all IBM and IBM-compatible equipment operating under OS/VS, the systems require no changes to hardware or software and are connected electrically only at the operator's console.

Scientific Measurement Systems, 26 Olney Ave., Cherry Hill, N.J. 08003, leases its SMS 100 system in a basic 10-unit display configuration for \$425/mo on a three-year contract.

Genesis One Computer Corp., 300 E. 44th St., New York, N.Y. 10017, leases its VSN display system in a basic 10-unit display configuration for \$450/mo.

XDS Sigma Users Can Put 1403s On-Line

SANTA MONICA, Calif. - XDS Sigma users can now use IBM's 1403 printers through Spur Products Corp.'s S1403/Sigma controller.

The controller interfaces any Sigma computer directly to the 1403 and uses a customer-supplied XDS 7900 subcontroller, which is installed in the controller enclosure at the Spur plant.

The controller itself is contained in a

printer-high rack and includes all logic cards, memories, mating connectors, power supplies and instructions for operating, programming and maintenance.

The controller was field tested at the Ohio College Library Center in Columbus, Ohio. The controller leases for \$310/mo with maintenance available through Sirvess, Inc. Spur is located at 2928 Santa Monica Blvd., 90404.

Calculator Incorporates Cassette Memory

PALO ALTO, Calif. - Storage capacity of over 40 times the basic calculator memory is provided by a built-in tape cassette unit in the Hewlett-Packard Model 9821A desktop calculator. Since each 300-ft cassette has a capacity equivalent to about 8,000 registers, the user can store very long programs or large amounts of data, HP said.

Programs can be recorded onto or loaded off the cassette manually or under program control. Cassette control, either from the keyboard or program, is provided by a built-in ROM.

Among the features of the cassette unit is its ability to go directly to a file upon identification number command. Data can be recalled from that file, modified and then restored to the same file without rewriting on a second cassette. Search speed is 130 ft/min in either direction from anywhere on the tape. Files of different lengths can be recorded on the cassette in any sequence.

A natural algebraic language, such as that used in the currently available Model 9820A calculator, makes programming and operation relatively simple for the user, HP noted.

The basic Model 9821A has 167 registers. It may be obtained with an initial configuration of 423, 935 or 1,447 total registers. With the basic memory, the Model 9821A can solve 16 simultaneous linear equations with 16 unknowns. With the fully expanded memory, the calculator can solve 70 simultaneous equations with 70 unknowns.

Subroutines can be nested up to 30 deep. Sixteen flags are available; each flag can be set or cleared either by a program statement or from the keyboard. Register addresses can be computed or nested for indirect addressing.

Price of the basic Model 9821A calculator including 167 registers is \$4,975.

Delivery is six weeks from the company at 1501 Page Mill Road, 94304.

16-Bit Mini 'Environmentally Resistant'

NASHUA, N.H. - A 16-bit minicomputer system which can execute instructions at a 5 MHz rate and which is designed for particularly rugged environments has been announced by Sanders Associates, Inc.

The MIP-16 is available in two configurations for severe and industrial environments. In the severe environment configuration, the CPU is packaged on two 5 in.

x 7 in. cards, and the complete computer system requires as little as 70 cubic in.

The MIP-16 is priced from \$15,000 for an 8K-word industrial environment system and from \$30,000 for an 8K-word core memory severe environment computer.

Sanders is located at 95 Canal St., 03060.

For Ford

Luggage Lockers Distribute Data

RAWSONVILLE, Mich. - Borrowing an idea from luggage checking lockers found in railroad, bus and airline terminals, Ford Motor Co. discovered an efficient system for temporarily storing and distributing the mass of information and reports produced by its data processing centers here.

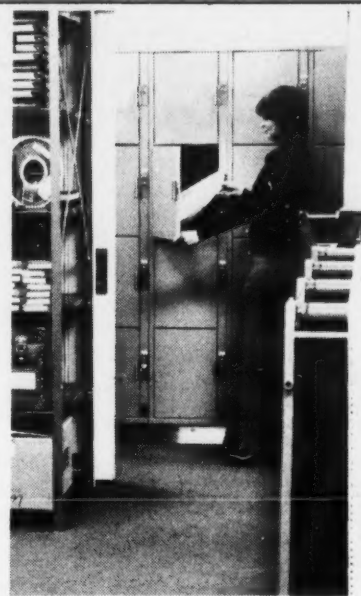
As part of a major modernization of its General Products Division's computer center Ford installed a complete wall of small parcel lockers produced by the American Locker Division of AVM Corp.

Ford uses 36 lockers - with locking doors on two sides - to distribute print-out listings and other report data as they are processed by the center's computer system.

One side of the double-door locker faces the computer center distribution room. The other side of the locker installation forms one wall of a central pick-up and receiving area that is completely outside the DP center.

Each department serviced by the DP center is assigned a locker and key, and is responsible for picking up its own output reports on a regular basis.

R.E. Olson, supervisor of the computer center, explained that the locker system provides rigid security on the flow and delivery of information from the center.



From within the computer center, completed printouts are secured in designated department lockers for distribution.

Since the computer center operates around the clock, work that is completed after normal office hours can be placed in the assigned locker, and retrieved by the department the first thing in the morning, he noted.

American Locker prices the two-door locker units between \$80 and \$200 each; single-door units are priced from \$40 to \$100 each. American Locker is at Jones and Gifford Avenues, Jamestown, N.Y. 14701.

Mark Reader, Keyboard and Tape Combined in Data Entry System

OAKLAND, Calif. - Decision, Inc. has combined its optical mark reader, the OMR 6500, with an IBM-compatible magnetic tape drive to build the Model MCS-1 data entry system.

The scanner permits the entry of block print numerics, marked data entry and plastic card impressions. Continuous forms can be premarked on a line printer. The reader can be programmed for forms not to move until detected errors are manually corrected.

A single MCS-1 system can accomplish

the same volume of data entry as four to six keystations, according to the company. It is capable of operating under both automatic and manual controls and the system will accommodate as many as 7,200 high-density, full-page source form images.

For data entry operations requiring auxiliary information, the MOS-1 accommodates keyboard displays. This allows additional records entered from an alphanumeric keyboard to be merged with scanned records on the tape.

Forms from 3 in. x 5 in. to 8-1/2 in. x 11 in. are scanned before paper movement to prevent errors.

Single system price for the automatic feed OMR 6500 with nine-track tape drive is \$15,000. The manual feed OMR with nine-track tape drive costs \$13,100.

Decision is located at 5601 College Ave., 94618.

Lock Guards DP Center

COLLINSVILLE, Conn. - Need a new lock for the computer room that can easily be changed when the staff changes?

The Simplex Lock has five buttons in a circle. Any authorized person can change the combination in less than a minute.

The only tools needed to install the lock are a screwdriver, electric drill and a 70 cent hole saw set. Simplex models start at less than \$50 from Simplex Security Systems, Inc., 10 Front St., 06022.

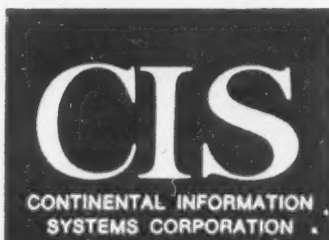
Corrections

The Memorex Mark XD disk pack [CW, Nov. 28] is not IBM-compatible. The Honeywell Model 58 uses 720 W per hour [CW, Dec. 12].

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#4 Delivery	4/19/74
370/158 Model K	
Delivery	12/28/73
370/168 Model K	
#1 Delivery	4/19/74
#2 Delivery	5/17/74
#3 Delivery	5/17/74

The Computer Caravan welcomes:

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as an exhibitor in The Spring 1974 Caravan.

Scope Data will exhibit the heavy duty Series 200 non-impact R/O and KSR printers. Speeds up to 240 cps asynchronously and thruput to 1200 baud.

These low cost printers have standard features which includes RS232C and Parallel TTL interfaces, plug-in modular construction, complete power supply, print density control and many more.

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Bright Tape Drive Family Born

SUNNYVALE, Calif. — Bright Industries has introduced a series of industry-compatible 10-1/2 inch magnetic tape drives and formatters called the Bright 2700 Series.

The Bright 2730, 2740 and 2750 units feature easy, one-hand loading, tension-arm retract or automatic vacuum column loading, as well as quick release hubs, the firm said. All of the models can read and write 7- or 9-track NRZI or phase-encoded tapes, and dual NRZI/phase-encoded option is available. Conversion from NRZI to phase-encoded formats can be accomplished in the field with a simple, single board swap.

All models have three separate read clipping levels for maximum error recovery capability. To assure high reliability in the read-while-writing operation, the company has added high write clipping levels. The character gate time is also reduced to minimize skew errors when the tape is read on another tape transport, the company said.

The Bright 2730 is a tension-arm tape

drive which has tape speeds from 12.5- to 45 in./sec.

The Bright 2740 is a vacuum column tape handler with speeds from 12.5 to 45 in./sec. The unit's wide 3-inch vacuum column reduces sound levels so that data reliability can be achieved even in areas which require a low audible noise environment, according to the firm.

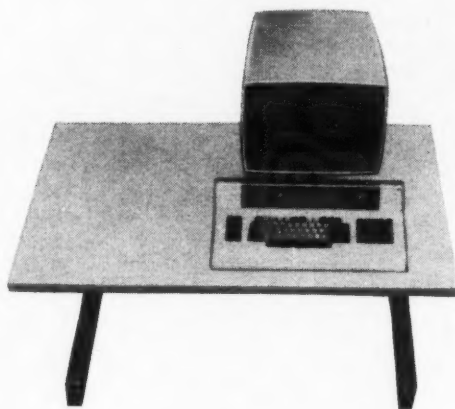
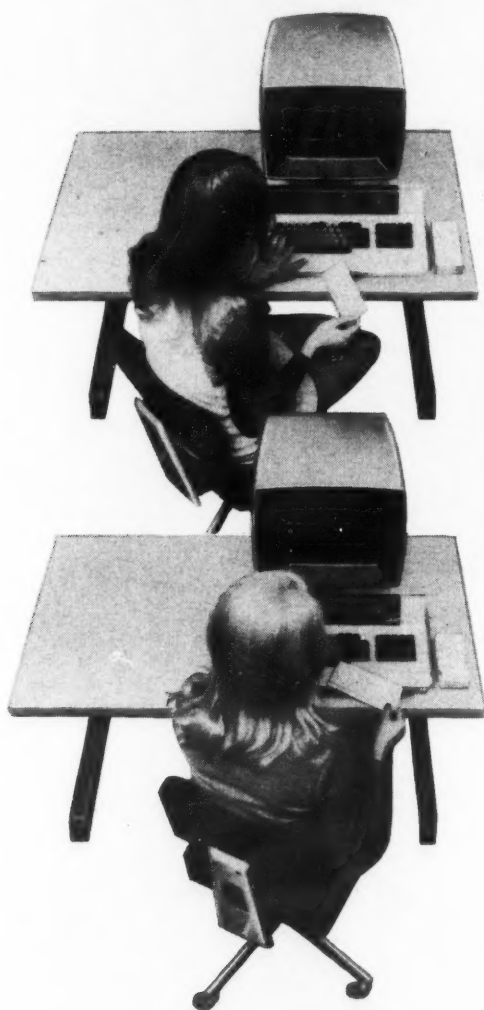
The Bright 2750 is a two-column vacuum tape handler system which provides tape speeds up to 75 in./sec.

NRZI, PE or dual NRZI/PE formatters are available in rack-mountable 3-1/2 inch-high chassis. All power supplies are built in, and each formatter can handle up to four tape transports. Unit prices including formatters range from \$3,000 to \$5,000.

All of the units are available for 60-day delivery, and quantity and OEM prices are available. In addition, the company backs the new units with a 13-month parts and workmanship guarantee.

Bright Industries is at 686 W. Maude Ave., 94086.

When you consider key/disk... ask about the Cummins KeyScan™ Data Entry System.



Ask about key/disk. Up to 32 Cummins CRT Terminals are monitored by the powerful 96k byte 4400 Processor. Whether in large or small clusters, the CRT terminals and 4400 Processor afford the most accurate and reliable means of processing non-scannable data.

Ask about the powerful editing and validating features such as batch balancing, table look-ups, range checks, re-formatting, linked program levels, extended record processing, and batch summary records.

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Ask about scanning for high volume data entry. And about re-entering rejects with a single key stroke of each unrecognized character. Ask about printers and communications and learn about the 4400 KeyScan Multimedia Data Entry System.

Ask around. And while you're at it ask about Cummins, a company with over 45 branch sales and service offices located across the country. Send for the 4400 KeyScan System brochure. Write: 830 Waukegan Rd., Glenview, IL 60025. Or ask the operator to dial 312/724-8000 and make an appointment to visit our demonstration facilities.

Ask about the KeyScan Data Entry System. Then ask about other systems and you decide which is best.

4400

KeyScan Multimedia Data Entry System

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Diablo Disk Drives Suitable for Minis

HAYWARD, Calif. — Diablo Systems, Inc. has introduced the Series 20 line of fixed disk drives for use in minicomputer-based systems and intelligent terminals.

The new drives are 5-1/2 inches high and weigh about 50 pounds. Power consumption of less than 150 W permits use of simple, low-cost power supplies, according to the firm. Since only dc power is used, Series 20 drives can operate anywhere in the world without modification, the firm said.

Model 21, first in the new series to be delivered, is a fixed-media disk drive providing 24M bits of storage. It uses IBM's 14-inch disk media or approved equivalents. Bit density is 2,200 bit/in., track density is 100 track/in. Average head-positioning time is less than 70 msec.

An integrated, fixed-disk spindle assembly is used in the Series 20, with the motor mounted directly on the spindle shaft. All belts and pulleys have been eliminated from the drive, thus eliminating belt wear and pulley tolerances as a factor in spindle speed control, the firm noted.

Filtered air is forced into the fixed-disk area through a 99.97% efficient filter, then exhausted at the rear of the drive, the firm said.

Series 20 was designed to achieve 4,000 hours of mean time between failures.

Preventive maintenance, consisting of changing the air filter and cleaning the read/write heads, is suggested at six-month intervals or each 1,000 hours of operation. Single unit price is \$2,100 with OEM discounts.

Diablo Systems is headquartered at 24500 Industrial Blvd., 94545.

Mag Tape Controller, Formatter Made for Novas

OAKLAND — A single board magnetic tape controller and formatter using phase-encoded recording techniques, announced by Decision, Inc., can be used on all Nova-line minicomputers. A single Model 3180 magnetic tape controller can interface with up to four unformatted phase-encoded mag tape drives by "daisy-chaining." The 3180 controller's 9-track phase-encoded format is fully IBM-compatible, according to Decision.

The controller and formatter are packaged on a 15-inch square board, which occupies a single Nova I/O subassembly slot.

The 3180 software support includes both input and output drivers to simplify programming with a full complement of diagnostic software as well.

Single units are priced at \$4,300 with OEM discounts available.

Decision is at 5601 College Ave., Calif., 94618.

Swiss Check Air

STOCKHOLM, Sweden - The creation of a data bank for ecological information has been proposed by a commission on environmental control in its official report to Swedish Minister of Agriculture Ingemund Bengtsson, according to the Swedish International Press Bureau.

A special environmental data committee would set up and operate the proposed data bank, which would be called the Environmental Protection System.

The data bank, if adopted, would contain information on developments, situations and other environmental factors. At present, information is not accessible and much work is duplicated.

The system would begin in mid-1974 and would be run on an experimental basis up to the close of the decade. Total costs for the first year in operation would be about \$2.5 million.

The commission also proposes that a nationwide network of observation stations be set up. They would collect data on air, precipitation, surface and subsoil water, ground and vegetation. Statistics would be published in a special annual report.

Folks in Cleveland Get to Sound Off

CLEVELAND - Tired of taking your political displeasure out on your husband or wife? If you live in Cleveland, you will soon be able to register your frustrations with a computer system reserved for just that purpose.

Mayor Ralph J. Perk recently approved a \$20,000 federally financed project to compile complaints about Cleveland in a computer.

"There will be daily printouts of complaints, and the same complaint will be printed each day until it is resolved," Perk said.

Perk said the system would display a "complete daily flow and pattern of complaints." He also said it would provide a basis for judging the efficiency of department heads.

Dorm Gets a Roommate

LARAMIE, Wyo. - What do you do when the engineering building is locked and you need to use the computer for your homework? At the University of Wyoming all you have to do is walk down to the lounge in your dorm.

In an effort to make terminals more accessible to students, teletypewriters have been installed in two dorms for 24 hour-a-day access to an XDS Sigma/7.

Environmental Mini Added To TVA Power Plant

CUMBERLAND CITY, Tenn. - In an effort to meet rigid environmental standards, the Tennessee Valley Authority has installed a minicomputer here at its largest coal-fired power generation plant.

The Data General Nova is part of the first of a number of data systems TVA engineers will install near steam-electric plants. Sensors on a 400-foot-high tower located a mile from the plant measure wind speed and direction, air temperature, dew point, rainfall, atmospheric pressure, solar radiation and total radiation.

In addition, nine sulphur dioxide monitors and six river temperature stations collect data at remote sites ranging from one to 20 miles from the plant.

The minicomputer accumulates the data by addressing a remote station, which acknowledges its address signal and transmits the data to the minis. When the mini determines the correct station is responding and the data is valid, the data from the station is stored in the computer.

Parking Ticket Takes a Trip

LYNCHBURG, Va. - What's so unusual about a Virginia citizen receiving a parking ticket from Washington, D.C.? In this case, the man had not been in Washington since 1949.

The problem, which affected about 15 persons in Lynchburg, about 10 in Campbell County and others in Roanoke, Salem and Danville, is traceable to an existing arrangement whereby the district supplies the Virginia Division of Motor Vehicles (DMV) with licenses of motor vehicles involved in traffic violations in Washington.

Information is supplied by a punched tape which is fed into computers at DMV in Richmond. James Vaseleck, director of DP in the District of Columbia, said some of the errors could be traced to Virginia's new system of staggering the issuance dates of license plates. He said when the new system became effective, the computers were adjusted to the change and the district police were notified.

However, Vaseleck said, policemen made the error of marking Virginia plates as expiring in 1973, while the computer was programmed to 1972 plates expiring March 31, thereby issuing tickets to holders of last year's registrations.



Minicomputer SOFTWARE

Here's an exciting new operating system with RPG that dramatically simplifies and speeds data processing applications

CIMOS-22 is a disk-based operating system for the CIP/2200 minicomputers which consists of language processors, programming and debugging aids and services that simplify data processing applications. The capabilities of CIMOS-22 are packaged in a flexible system design so that each user can tailor the operating system to his individual needs. From either RPG or assembly language programs, the user can take advantage of the high-level data management facilities of CIMOS-22. These facilities include the ability to organize, catalog, store, retrieve and update data files. From a system console or assembler language program the user can create and delete disk-based files. On-line editing capability permits the user to build and maintain data files as well as source and object program libraries. There is much more to CIMOS-22 that you should know about. It's all detailed in our new brochure shown here . . . and it's yours free. Cincinnati Milacron, Process Controls Division, Lebanon, Ohio 45036.

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FIRST DAY—Source Data Automation Today Workshops On:

1. POINT-OF-SALE
2. INTELLIGENT TERMINALS
3. OPTICAL SCANNING
4. OFF-LINE KEY ENTRY

THIRD DAY—Operations Management/74 Workshops On:

1. PERFORMANCE MEASUREMENT
2. PROJECT CONTROL
3. MULTI-VENDOR INSTALLATIONS
4. SMALL CENTERS

SECOND DAY—Data Communications Update Workshops On:

1. NETWORK PLANNING
2. FRONT-END PROCESSORS
3. ON-LINE SYSTEMS
4. EQUIPMENT SELECTION

FREE AFTERNOON SESSIONS

Each day features an important current topic in an open afternoon session—free to all Caravan attendees.

First Day—Personnel

Second Day—Data Communications

Third Day—Data Base Design

THE EXPOSITION

There's no better way to see and compare the latest EDP equipment and services. More than 60 leading computer companies are expected to be at our three-day Exposition with a wide variety of products and services—products and services you can use right now in your installation to cut costs and increase efficiency. And it's all gathered together in one bright, pleasant, *uncrowded* exhibit hall. There's plenty of time to talk to the companies that interest you, and gather the information you need to keep ahead of this fast-moving field.

THE SCHEDULE

Forums

- 9:00 - 9:10 Welcome
9:10 - 9:30 Computerworld Reports
9:30 - 10:15 Panel Discussion
10:30 - 11:45 Concurrent Workshops
12:00 - 1:00 Luncheon
1:15 - 2:30 Workshops

Open Afternoon Sessions

Each afternoon from 2:45 to 4:00

Exposition

Each day from 10 A.M. to 6 P.M.

THE CITIES

The Computer Caravan is the truly national computer conference. We don't make you come to us. We come to you, with a complete 10-city schedule from February 20 to May 2. We'll be in a city near you. (See the Forum Registration Form for complete schedule of cities, dates and sites.)

REGISTER NOW

If you register in advance for our User-To-User Forums, you'll get a discount of \$5 per day from the price at the door. If you attend all three days, that will save you \$15, just for acting now

NOTE:

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☐ Second Day—Data Communications Update
☐ Third Day—Operations Management

check city

- | | | |
|--|---------------|---|
| <input type="checkbox"/> Washington | Feb. 20-22 | Shoreham Hotel |
| <input type="checkbox"/> Cincinnati | Feb. 26-28 | Cincinnati Convention Center |
| <input type="checkbox"/> Houston | Mar. 5-7 | Albert Thomas Convention Center |
| <input type="checkbox"/> Anaheim | Mar. 19-21 | Anaheim Convention Ctr. South Hall (Exposition) Sheraton Anaheim (Forums) |
| <input type="checkbox"/> San Francisco | Mar. 26-28 | Civic Auditorium |
| <input type="checkbox"/> St. Louis | Apr. 3-5 | Chase Park Plaza Hotel |
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Total number of days registered _____ times \$30=\$_____

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For additional registrations, please copy this form.

Please register me for the forum(s) indicated. I understand that this includes luncheon, workbook and admission to all three days of the Exposition. My check or purchase order is enclosed.

(No advance registration is required for the Exposition only.)

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- 01 Mining/Construction/Oil & Refining
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03 Manufacturing (other)

04

- Utilities/Comm. Sys./Transportation
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureau/Software/Planning
08 Business Services (except DP)
09 Education/Medical/Legal

10

- Federal, State and Local Government
12 Communications/Printing/Publishing
13 Other

FUNCTION

- 01 Corporate Officer
02 Data Processing & Operational Management

03

- Data Processing Professional Staff Consultant
04 Lawyer/Accountant
05 Engineering-Management Scientific/R & D Sales/Marketing/Account Executive
06 Librarian/Educator
07 Other

Society Sundries

NMA to Visit Houston

HOUSTON - General interest topics and practical applications and technology of micrographics will be the order of the day at the National Microfilm Association's Annual Mid-Winter Meeting.

The meeting, Jan. 16-18, at the Hyatt Regency Hotel, includes seminars on electronic processing and computer micrographics.

Cost for the conference is \$60 for NMA members, \$75 for non-members. Additional information is available from John Bidwell, National Microfilm Association, 8728 Colesville Road, Silver Spring, Md. 20910.

NMA Proceedings Set

SILVER SPRING, Md. - The Proceedings of the National Microfilm Association's 1973 Annual Conference and Exposition are now available.

Copies of the book are free to NMA members. Additional copies may be purchased for \$5 (hard copy) or \$1.50 (set of five microfiche). Prices for non-

members are \$9 and \$2 respectively.

Proceedings are available from the Publications Order Department, National Microfilm Association, 8728 Colesville Road, 20910.

Health Group to Play 'Game'

HOUSTON - "River Game - Why Have a Nurse in Data Processing" is the title of a presentation scheduled for the Hospital Information Systems Sharing Group's (HISSG) first quarterly meeting for 1974.

The meeting will include update reports from Mt. Sinai Medical Center (New York) and St. Louis University Hospitals on their information processing activities.

A panel discussion will cover the role of the health care team in health care computer applications.

Further information on the meeting, Jan. 15-17 at the Marriott Inn, is available from George Kershaw, HISSG Membership Committee, c/o McKay Dee Hospitals, 3939 Harrison Blvd., Ogden, Utah 84403.

New York Puts Limits On DP Dating Firms

NEW YORK - Love may be forever but consumer contracts with computer dating firms may not exceed two years or \$250, Attorney General Louis J. Lefkowitz said, in announcing that a firm which he said had violated both provisions of New York State law had agreed with his office to cease the alleged practices.

Operation Match, Inc. of Cliffside Park, N.J., agreed to cease and desist from offering contracts for social referral services that exceed \$250 and/or run for more than two years.

Provisions for refunds of all monies in excess of \$250 were also contained in the agreement for all contracts signed after Sept. 1, 1971. Operation Match had offered and executed contracts ranging in cost up to \$595 and for a three-year duration.

Although Operation Match entered into the agreement without admitting a violation of law, the company paid \$250 in costs to the state, according to Lefkowitz.

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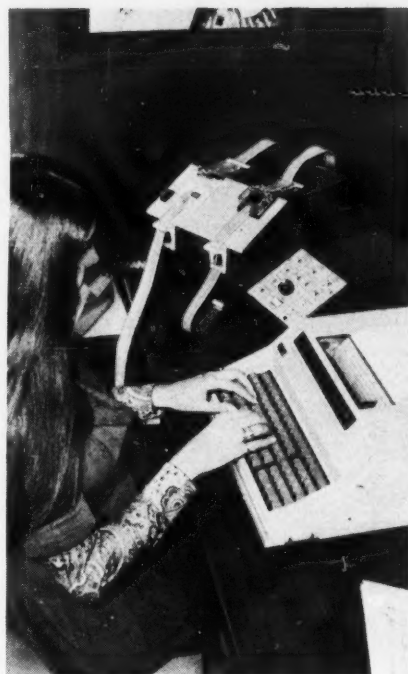
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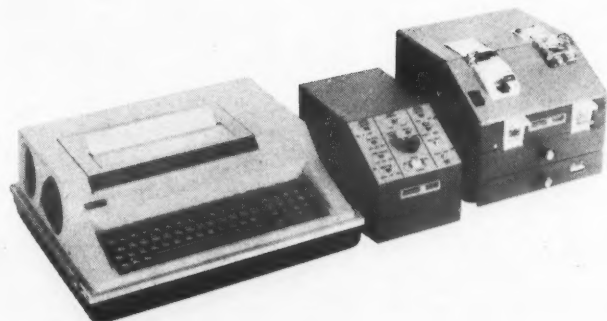
The Execuport 625 Reader/Punch works with the entire line of Execuport keyboard terminals or any other data terminals that use RS232 connectors. It includes an integral power supply and a separate control unit which may be remotely positioned. The electronics are high-reliability integrated circuits on readily accessible, easily replaced circuit boards.



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Are Vital Records Secure at Center? Establish Backup

TORONTO, Ont. - A simple way to determine the security of your computer system is to check it against the following checklist of security "musts" concerning the vital records program:

- Have the internal audit department determine the specific importance and sensitivity of all records.

- Assign responsibilities to assure that information which is necessary to reconstruct the vital records of the organization is always up-to-date and readily available.

- Have the internal audit department designate the files to be considered vital to the organization and, therefore, to be protected by:

- On-site protection, such as three-generation backup for magnetic tapes, vaults or special filing cabinets.

- Duplication of records onto media such as paper, magnetic tape or microfilm.

- Maintain an inventory of vital information needed to recreate data and operate a backup facility (for example, vital applications, equipment configuration, engineering change levels, operating system and version, program library, data files, programs and program documentation, operating documentation, supplies and other materials required for immediate recovery processing).

- As new systems are created and existing systems altered, create new backup for these programs and the associated documentation promptly, and store it at the backup location.

This checklist was compiled by DCF Systems Ltd., 74 Victoria St., Toronto, Ont., M5C 2A5.

Raised Hoods Bring Raised Eyebrows... And Raised Arms

LEVITTOWN, Pa. - Raised hoods... raised eyebrows... raised arms.

That was the sequence of events here when an apartment complex resident reported two men raising hoods on several cars in the parking lot to the Middletown Township Police Department. Patrols dispatched to the area apprehended the men and charged them with prowling.

National Crime Information Center checks made through the Pennsylvania Commonwealth Law Enforcement Assistance Network (Clean) indicated one of the arrested men was wanted by a county sheriff in a nearby state for failure to return a rented motor vehicle and by a Pennsylvania county court for failing to appear for trial on a charge of possession of drugs.

The man was held at the county prison to face charges and await extradition.



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For British Warehouse

Mini Directs Inventory, Stock Movement

PURFLEET, ESSEX, England — A minicomputer with 12K words of memory and 500K characters of disk storage is controlling inventory and stock movement in an automated warehouse here.

At Van Den Berghs & Jurgens Ltd., the mini controls the movement of pallets holding food products in an 11-level warehouse designed to handle 70 pallet inputs per hour and 85 pallet outputs per hour, 24-hours-a-day.

Products arrive in the warehouse from an adjacent manufacturing plant or other Van Den Berghs plants. The pallets are assembled by product, and a punched card containing an identification code for each product is attached to each pallet as it is loaded onto a conveyor belt.

An elevator takes each pallet from the conveyor to the third level of the warehouse, where it is stopped briefly outside an office. There an operator collects the punched card from the pallet and feeds it into a card reader linked to the minicomputer.

To provide a check on keypunch accuracy, the operator reads the product code printed on the

boxes on the pallet and types this code on the keyboard of a visual display terminal. If the two codes are identical, the computer activates the machinery to move the pallet into the stacking area. If there is a mismatch the operator controls the number entered into the computer.

The mini allocates a position to the ingoing pallet in one of the aisles of the warehouse. One of four cranes then takes the pallet from the input conveyor and places it in the position allocated in the stack.

The allocation function is "intelligent" to the extent that the computer checks its files for requests for products to be sent to the truck-loading bays. If an incoming pallet contains that product, the computer directs the crane to stack it in the empty position nearest the output conveyor, thus minimizing necessary movement.

The position of each of the 4,048 pallets in the stack is recorded on the Honeywell H316's disk files, which are automatically updated as pallets are assembled, stacked and removed.

Each day Van Den Berghs' transportation department prepares a list of deliveries due the next day. All invoices and other documents are generated by the company's central computer installation.

A summary paper tape is prepared every evening with details of the next day's truck loads, and a load number is allocated to each truck.

'Boob Tube' Welcomes Another Watcher

OTTAWA, Ont. — Will Neilsen ever consult computers for their opinions on TV shows before compiling the ratings?

Probably not, but the Canadian Radio-Television Commission (CRTC) is programming a computer to watch, analyze and classify shows.

Under a CRTC grant, Dr. David C. Coll is working along the lines of Australian research which indicated that different types of programs had distinctive patterns of action. For instance, a talk show would have relatively little action whereas a western would characteristically have a lot of movement on the screen.

Coll plans to have a computer store a digitized image of 65,000 points on a television screen. Every few seconds a new television image will be compared with the stored image to see how much change has occurred.

Vacation Deal Investigated

CW West Coast Bureau

SACRAMENTO, Calif. — The state attorney general's office is investigating a vacation promotion deal involving computer-selected winners.

Letters sent to Californians by the Market Development Corp. of Cincinnati, Ohio, offered \$250 vacation certificates for winners chosen by a computer.

Before a winner could receive a certificate, however, he had to pay \$15. He then got a vacation certificate for two to Las Vegas, Disney World or Miami Beach — without transportation — to attend presentations on land development.

It was reported by the Cincinnati Better Business Bureau that all the sweepstakes certificates had the same number.

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COMPUTER INDUSTRY

Total Installed Base of \$12.23 Billion

IBM, Honeywell and ICL Rank Top Three in Europe

By Molly Upton
Of the CW Staff

LONDON — IBM, Honeywell and International Computers Ltd. are the leaders in installed DP bases in Europe, according to a study by *EDP Europa Report (EDP/ER)* published by IDC Europa Ltd.

Although the large firms rank one, two and three for Europe as a whole, there are several variations in ranking within the individual countries.

IBM, however, ranks first in each of the eight countries and regions in the report.

Total installed base in Europe at the end of 1972 was \$12.23 billion, the report indicated.

In the UK and West Germany, Honeywell ranks third and Univac fourth, with second place going to ICL in the UK and to Siemens in Germany.

Honeywell moves to second place in France, with an installed base valued at \$460 million, followed by Control Data Corp., \$122 million, and Univac, \$120 million as of the end of 1972.

Honeywell retains second place in Italy with \$148 million, and Benelux with \$94 million, while Univac is number two in Switzerland with \$66 million, and Scandinavia with \$80 million.

Control Data Corp. also gained second place in Switzerland, with \$45 million out of a total installed base valued at \$497 million.

The highest ranking achieved by Burroughs was fifth, both in the UK with \$121 million worth of equipment, and France with \$83 million.

NCR's best ranking was fifth place in Italy, with \$23 million in equipment.

Outside of their native territories, ICL's and Siemens' market shares dropped drastically. ICL managed fifth in Scandinavia, with an installed base valued at \$46 million out of a total of \$975 million, while Siemens gained a third in the Benelux, with \$66 million out of a country with \$736 million worth of DP equipment.

West Germany, although it has a relatively low EDP/GNP ratio (installed base: gross national product), ranks first among European nations in terms of the total value of its installed DP base, according to the report. A low EDP/GNP ratio indicates sizable potential market growth. West Germany's is 1.30, compared with 1.33 for Europe as a whole and 2.5 for the more computerized U.S., according to the report.

In terms of individual countries in Europe, West Germany ranks fifth in its EDP/GNP ratio, with the UK, Switzerland, other countries (such as Spain, Austria, Portugal, Greece and Ireland) and Italy preceding it in that order.

The value of Germany's installed base is \$3.06 billion, while that of the UK is \$2.78 billion and France, \$3.59 billion, the report indicated.

Patterns of hardware ownership vary in Europe according to country, with Switzerland leading all others in percentage of the number of CPUs purchased, 69%, and the value of CPU purchased, 68%.

The UK ranks second in both categories, with 58% of its machines purchased and

53% of the value of its units purchased.

Italy ranks first in the percentage of CPUs rented, 81%, followed by France, 75%, and West Germany, 70%.

Looking at the installed base of all of Europe according to industry, manufacturing leads with \$4.36 billion of equip-

ment, or over a quarter of the total \$12.23 billion installed base, according to the report.

Miscellaneous business services ranks second with \$1.7 billion worth of equipment, and banking is third with \$1.44 billion. Federal government is fourth with \$1.05 billion.

Memorex Sues IBM for Over \$3 Billion

SANTA CLARA, Calif. — Memorex Corp., while not the first of the independents to file an antitrust suit against IBM after the Telex decision, has nevertheless filed for the largest amount so far, in excess of \$3 billion.

The Memorex complaints charge IBM with monopolizing the market for leased peripheral products through the use of non-payout agreements which the complaints say have become the standard in the industry.

Individual complaints were filed on behalf of Memorex Corp., ILC Peripherals, its leasing subsidiary, and several foreign subsidiaries.

Damages claimed before trebling are \$750 million by Memorex, \$100 million by ILC and \$200 million for foreign subsidiaries.

An IBM spokesman said, "We believe the charges are without foundation. Some of the allegations appear to be based on the judge's ruling in the Telex case. We believe that ruling to be erroneous and have been granted an expedited appeal."

The Memorex complaints allege that since IBM assumes the risks of ownership and financing the peripheral products after they've been acquired by the user, "consequently IBM's competitors also are compelled to assume the risks of ownership and risks of financing their products."

Because ILC, Memorex and other competitors do not have the financial backing

available to IBM to support such a program, they "have been severely damaged and virtually excluded from the market for leases," the complaint charges.

Other charges more closely parallel those made by Telex, charging that IBM instituted "drastic price reductions" to eliminate competition.

The suits also charge that IBM, through various tactics, forced customers to stop using Memorex products.

In addition, the suits charge IBM with illegally withholding design specifications

of interfaces.

Because of these practices, Memorex claimed it lost revenue and profit, its growth has been "drastically curtailed" and its "ability to secure equity financing or debt financing at reasonable interest rates has been greatly reduced with the result that Memorex's scale of operations has been drastically reduced, product programs have been abandoned and new programs couldn't be commenced." In July Memorex announced it was abandoning its mainframe manufacturing operations.

Most IBM Documents Privileged, Special Court Group Concludes

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK — IBM has won a victory in Federal District Court here allowing it to keep several thousand pages of privileged documents in its case with the government.

At question in this action was the work product of several IBM task forces, which the firm claimed had been set up solely to help its outside attorneys and therefore deserved to be protected under attorney-client privilege.

However, the government had argued that these task forces — and the work conducted by Hilary Faw as director of the IBM Office of Business Practices — were used to run the IBM business and not solely for legal purposes.

A group of special masters detailed by Judge David Edelstein to study these documents has concluded that they are subject to the attorney-client privilege and therefore should not be turned over to the government with a few minor exceptions.

However, their ruling does not affect the 1,200 documents Edelstein has already ordered IBM to turn over to the government and for which he has fined IBM \$150,000 daily for its failure to comply.

IBM is currently appealing that fine for contempt of court.

The special masters noted, "IBM asserts

that the various task forces and the Office of Business Practices were established at the request of counsel and consisted of IBM businessmen who were detailed to the task forces in order to educate the attorneys about the computer business, and that all this activity was in anticipation of litigation."

However, they noted, "The government, in response, argues that the documents generated by these task forces may have involved lawyers but were created for business purposes, i.e., to aid IBM executives in making decisions which would enhance IBM's competitive position in the computer business."

"A perusal of the documents," they added, "could support either position since the documents, on their face, could be used for either business or litigation, or indeed, for both purposes."

In every case, the masters found the task forces were for the sole purpose of preparing litigation.

But they noted those documents had already been turned over to the government.

The special masters noted that "even though privileged as a work product, these documents may be reached if the government can demonstrate to the masters that it 'has substantial need of the material' and that it 'is unable without undue hardship to obtain the substantial equivalent of the material by other means.'"

Teale Contract Signed But Vendors Protest

CW West Coast Bureau

SACRAMENTO, Calif. — A two-year \$19.9 million contract with IBM for the Stephen P. Teale Consolidated Data Center has been signed, but not without protest and a hint of future problems.

At a hearing last week independent vendors protested before the State Assembly Ways and Means Committee about the tactics of IBM in securing the negotiated contract.

The committee took no action, although it could propose withholding future funding in next year's state budget rendering the contract inoperative.



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Report Pushes For Indigenous Canadian DP Industry

OTTAWA, Ont. — The Canadian Government should take several steps toward promoting an indigenous computer industry, according to a report issued by the Science Council of Canada.

Through a system of grants in aid, the government should encourage the manufacture of minicomputers and peripherals, the report stated.

Canada, the report conceded, lacks the resources to manufacture mainframes. Canadian firms should therefore try to establish equity participation in multinational mainframe firms, as an alternative to establishing a mainframe industry on its own.

Words for Multinationals

Multinational firms, however, came in for some criticism, being blamed for a "retardation of the technical and managerial sophistication of the computer industry in Canada," according to the report.

Subsidiaries are at an advantage since they can obtain technological aid from their parent companies, while Canadian-

owned companies must build their own research and development facilities.

More attention should be focused on the service bureau sector. Although two-

International Roundup

thirds of the 140 bureaus are Canadian-owned, these receive less than one-sixth of the business in the field, the report said.

Special Provisions

The government should make special provisions under the tariff regulations and Excise Tax Act for the use and export of Canadian hardware and software, according to the report.

Reduction or elimination of the current 12% federal sales tax was recommended for computer equipment.

The report criticized the government-sponsored Program for the Advance-

ment of Industrial Technology for not considering software as a product needing support in the same way hardware does.

Canada should set up a software "clearinghouse" to detail all software available in Canada.

Canada ranks seventh in both number and value of installed computers and second in terms of the ratio of computers to people, and the Canadian industry is growing at 16% a year, the report also noted.

Univac to Expand Aussie Market

SYDNEY, Australia — Univac has begun a five-year plan to double its market share here to at least 15% and gain the number two spot, ahead of ICL, Control Data Australia and Honeywell, according to a report in the *Australian Financial Review*.

At present, Univac is the number five supplier in Australia, with an installed base worth \$42.1 million and 7.8% of the market, according to a market estimate.

IBM leads with \$341.8 million of installed equipment and 42.2% of the market; ICL is second with a value of \$105.3 million and 13% of the market; and CDA with a value of \$97.2 million and 12% of

the Australian market.

Honeywell, according to the breakdown, ranks fourth with an installed value of \$81 million and 10% of the market.

Univac's plans include recruiting three or four experienced computer salesmen by the end of the year, the report said.

Commercial Sales

Bill Wells, director of marketing, said Univac would concentrate more on commercial sales rather than on government and educational areas, with its new 90 Series computers, and to a lesser extent with its 1100 CPUs.

Wells felt Univac had reached its lowest ebb in Australia "about June" this year, and the company's prospects were now on the rise, he said, though Univac would not jump back as a major force in Australian DP overnight.

Scandinavian Banks Sign for TTYs, Minis

HELSINKI, Finland — Savings banks in four Scandinavian countries have submitted an order for \$32 million worth of teller terminals and minicomputers to Datasab, a division of Saab-Scania.

The order is for more than 6,000 teller terminals and almost 215 Datasab D5 minicomputers and stems from a joint development project in which the banks agreed on detailed specifications. An association formed by the EDP organizations of the banks to deal with common DP problems, Nordisk Spardata, aided in the project.

About 1,000 terminals are already in operation in the four countries, and completion of the order is expected before the end of 1975.

Up to seven terminals can be connected with a local minicomputer and branch offices can be linked on-line to a CPU at the head office.

IBM Business Volume Gains Down Under

SYDNEY, Australia — IBM Australia's business volume is currently running at more than double the company's comparative performance for the same year-ago period, according to Dr. Frank Barr-David, director of DP marketing.

Barr-David cited renewed Federal Government buying from late last year and renewed commercial buying this year as the main reasons for the improvement.

IBM Australia is said to be "fascinated" by the future terminal-oriented market here, more so than prospects for data services or educational business. Calculations of the needs for the bank, supermarket and department and retail store markets have been estimated at around \$200 million over the next five years.

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The next triennial IFIP Congress will meet in Stockholm, Sweden during the week of August 5-10, 1974. Everything will be under one roof. Both the technical program and equipment exhibition will be held at St. Erik's Fair, site of the 1972 Nobel Prize ceremony. It's a rare opportunity to share the world's progress in information processing.

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Alpex Computer Sues Pitney Bowes

NEW YORK - Alpex Computer Corp. has filed suit in the U.S. Court for Southern District of New York on its own behalf and on behalf of Pitney Bowes-Alpex (PB-A)

PB to Service PB-A Customers

STAMFORD, Conn. - Pitney Bowes (PB) has notified customers of Pitney Bowes-Alpex (PB-A) equipment that it will continue to provide maintenance to which customers were entitled under warranty or service maintenance agreements with PB-A.

In addition, the firm reassured customers it would make special service efforts during the peak Christmas season, and would continue to retrofit or replace equipment as necessary to bring it up to contract specifications, the spokesman added.

PB is offering a maintenance agreement that will provide field service, spare parts and replacement parts, and for ongoing mechanical and software systems support for a fixed term at "competitive prices."

PB told customers that virtually all key employees in the PB-A field service organization have transferred to the PB payroll.

against Pitney Bowes, Inc. (PB) and seven of the firm's officers and directors.

The claim seeks to recover \$75 million on behalf of Alpex and \$150 million on behalf of PB-A and to require defendants to account for damages alleged to have been caused the plaintiffs.

A PB spokesman said the firm denies all allegations and sees no basis for the suit.

The suit charged that PB induced Alpex to transfer to the joint company its Spice point-of-sale system and that PB acquired stock and obtained operational control of PB-A, excluding Alpex and its representatives from the business and affairs of PB-A.

Furthermore, the suit alleged, PB wasted and diverted assets of

PB-A, "failed and peremptorily refused to make reasonable efforts, or permit others to attempt to dispose of the business or assets of PB-A, as a viable alternative to terminating the business of PB-A."

The PB spokesman said PB, before the decision to unwind the business of PB-A, had looked for an additional partner or buyer, and there were no takers.

The firm is talking with International Computers Ltd. about the possible sale of Pitney Bowes Data Systems, the European marketing subsidiary of PB-A.

PB is seeking to sell off PB-A either as an entity or in parts. "We'll sell whatever we can," he said.

Expansions

Datum, Inc. has moved its general offices, divisions and subsidiaries to new corporate headquarters at 1363 State College Blvd., Anaheim, Calif.

Auto-Trol Corp. has moved to enlarged facilities at 5650 N. Pecos St., Denver, Colo.

GTE Information Systems has opened a manufacturing facility for the expanded production of the IS/1000 Series, doubling its

administrative and marketing space. GTE is at LaPalma Ave., Anaheim, Calif.

Hewlett-Packard has opened a 162,000-sq-ft addition which doubles the size of the division headquarters in Palo Alto, Calif.

On-Line Systems, Inc. has opened branch offices at 1900 Sulphur Road, Baltimore, Md., and 15666 Snow Road, Cleveland, Ohio.

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CICS SYSTEMS/PROGRAMMER

Local #128 user is urgently seeking an individual who could make a contribution in putting up the Customer Information Control System Package developed by IBM. Experience with B-TAM or other communication accessing techniques will suffice. BAL S/360/370 needed. This is a non defense manufacturing environment.

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DIGITAL LOGIC DESIGN \$13K-\$18K

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Electronic Memories and Magnetics Corp.'s Computer Products Division has been awarded a contract to furnish memory for eight IBM 370/155 computers currently in use by six state agencies and universities in Texas.

Data 100 Corp. has signed a contract with the U.S. Forest Service for the lease of up to 35 Model 78 remote batch terminals over a five-year period.

Shared Medical Systems Corp. has signed contracts with six hospitals to provide them with data communications programs, including a financial management system.

Logicon, Inc. has been awarded a contract by the Air Force Space and Missile Systems Organization for software development and analysis on the Minuteman III Intercontinental Ballistic Missile Command Data Buffer system.

Computer Sciences Corp. has received a contract from the Naval Electronics Laboratory Center, San Diego, to provide operations research and systems analysis services.

Lockheed Electronics Co., Inc. has received a contract from Western Electric Co. for microfilm retrieval systems to be used for directory assistance.

GTE Information Systems, Inc. has been awarded a five-year contract for the lease of currently installed stock quotation terminals and equipment and for the development of a nationwide brokerage data communications network by the firm of Paine, Webber, Jackson & Curtis.

Informatics, Inc. has received a contract from George Washington University to provide on-line computer-based retrieval services for the Population Information Program.

Future Metalworking Gains Laid to DP

ANN ARBOR, Mich. — Increased use of computers will play an important role in raising the level of productivity and cost effectiveness in the U.S. metalworking industries.

A panel of manufacturing personnel from metalworking industries, in conjunction with the University of Michigan, forecast production advancements to 1988.

Increased Productivity Needed

It is essential, they found, that these industries, which account for one fourth of the gross national product, increase their productivity to ward off foreign

competition.

The predictions fall into the general categories of organizational methods, systems engineering, equipment developments, and computer hardware and software.

- By 1977 — Programmer time per part will be reduced by 25%.

- By 1978 — About 25% of all equipment failures will be detected and diagnosed by on-line software.

- By 1980 — Instantaneous computer displays comparing scheduled versus actual conditions will be employed in 25% of all manufacturing operations.

More than 25% of all machine loading

and scheduling will be done with computers.

A new breed of production manager, familiar with computer methodology, will be commonplace.

One-fourth of new machine tools will have adaptive controls as standard equipment.

Total Systems

About 25% of all new purchases will be total systems, purchased from a single source.

- By 1982 — One-fourth of all formed parts will be generated by complete software systems that optimize product, tool and process considerations.

One-fourth of all tools and dies will be engineered and/or designed with computer graphics.

The production labor required per unit output of discrete part production will have decreased by 25%.

- By 1983 — On-line gaging will be included on at least 25% of all new machine tools.

The best attainable machine tool accuracy will have improved by 50%.

Storage

- By 1985 — More than 50% of all records, drawings, etc. will be stored in computer memory and accessed by automatic drafting equipment.

- By 1988 — A 10% to 20% reduction in intermediate level management, per unit of work, will result from advances in information networks.

Approximately 25% of all manufactured parts will be produced and inspected for an entire shift without human intervention.

The 42-page report is available from the University of Michigan's Industrial Development Division, 2200 Bonisteel Blvd., 48105, for \$5.

Electronics...New Energy Saver?

PLAINSVIEW, N.Y. — Electronics can play a significant role in making more efficient use of available energy, according to E. Floyd Kvamme, vice-president, marketing, for National Semiconductor Corp.

The development of electronic systems for consumer and commercial uses is on the upswing and most of these products will use less energy, he said.

"These are not 'pie in the sky' applications five to 10 years away, they are in development now for the 1974 and 1975 markets," he said.

"The recent development of low-cost microprocessors (minicomputers on an 8-1/2 inch by 11 inch circuit card) will permit room-by-room heating and lighting system controls for large buildings which will allow much more efficient use of power than by present large-area thermostatic methods.

"This system has already been developed by a major manufacturer," he added.

"In the DP industry, the use of semiconductor, rather than core memory, will

cut power consumption by 50% in large mainframe computers," he said.

"In mass transit, computerized bus systems in development will allow portal-to-portal transport and greatly increase consumer usage.

"Microprocessors in local power stations will monitor energy continually, not only making more efficient use of energy but averting large-scale brown or blackouts," Kvamme said.

"For example, electronic fuel injection and ignition systems on 1975 automobiles are expected to produce an average 40% savings on fuel consumption.

On a recent fuel injection test, one manufacturer increased mileage from four to 16 miles per gallon in worst-case stop and start conditions.

"In the home entertainment field, solid-state television and stereo systems consume 50% less power than tube versions.

"In appliances, electronic humidity sensors will automatically shut off dryers when clothes are dried rather than on a timing basis. The same principle will be used in ovens," he predicted.

You'll be in good company at La Caravane Informatique.

The travelling computer users forum and exposition will tour Europe's second largest computer market starting next February in Lyon. And several excellent companies have already reserved one or more booths for the exposition. We'd like to welcome them.

The French Computer Caravan also has an excellent name as co-sponsor — *Zero-Un-Informatique*, a leading computer industry publisher of both a weekly newspaper and a monthly magazine. *Zero-Un-Informatique* will provide local identification and promotion, and will assure that La Caravane Informatique is responsive to the current needs of French computer users, with locally run forums, workshops and seminars.

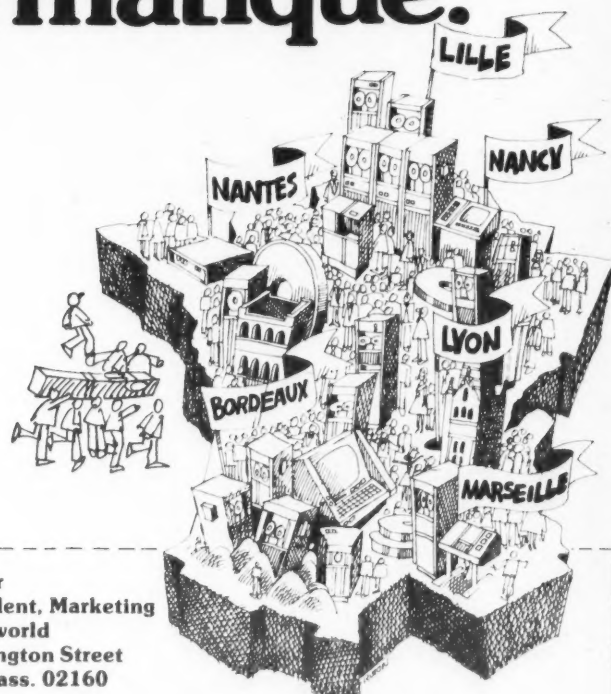
If you're marketing in the rapidly growing French computer market or if you want to be — La Caravane Informatique is a selling tool you shouldn't pass up. Here's the schedule:

Dates	City	Sites
February 26-28	Lyon	Palais de Congres
March 5-7	Marseille	Palais de Congres
March 12-14	Bordeaux	Foire Internationale
March 19-21	Nantes	Foire de Exposition
March 26-28	Lille	Palais de Expositions
April 2-4	Nancy	Palais de Expositions

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CI Notes

HIS NS Operating?

PARIS - The first Honeywell New System (NS) configuration is reportedly in operation at Honeywell-Bull nearby. Individual components of the system were assembled in France, shipped to HIS in Massachusetts for interfacing and system checkout, and the working system was then shipped back to Bull for evaluation.

Industry sources believe the system is the P7 medium-range configuration comparable to the IBM 370/135 and 145. A smaller P6 system is expected also in the NS line.

A larger machine, dubbed the P8 and reportedly designed by HIS in Phoenix, has been scrapped, sources said.

CMI to Install Dot Memory

BOSTON - Cambridge Memories told shareholders at its recent annual meeting it plans to install its first moving magnetic domain (bubble-like dot memory) for use in a virtual storage system in an IBM 370 configuration during the first quarter of this year.

The memory will have a capacity of 25M bits and replace an IBM 2305 fixed-head disk used in fast-page sweeping.

Ampex Lays Off 75

REDWOOD CITY, Calif. - Ampex Computer Products Division has laid off about 75 employees, primarily tape engineers.

Ampex Corp. is seeking to sell its 20-acre plant with a 300,000-sq-ft manufacturing facility in Marina Del Rey.

A spokesman said the two moves were unrelated, and that Ampex hoped to lease back space in its plant.

Singer Cuts Back About 200

SAN LEANDRO, Calif. - Singer Co. has laid off about 200 marketing support, engineering and administrative employees here. The plant makes System 10s, Model 925 MDTs point-of-sale terminals and the Model 6800 desktop processor.

Supershorts

Data 100 Corp. has terminated plans to acquire Circuit Science, Inc., maker of printed circuit boards, and Computer Communications, Inc.

Honeywell has shipped the last 6000 system as part of the Worldwide Military Command and Control Systems (Wimmix) contract. To date, Honeywell has installed equipment worth more than \$100 million as part of the contract.

Hoskyns Systems, Inc., the U.S. arm of the British Hoskyns Group, has formed a new subsidiary, Hoskyns Inc., which offers project management and software services.

Cronin Inforex Chief

BURLINGTON, Mass. - The new chief executive officer and chairman of the board at Inforex, Inc. is Timothy C. Cronin, former executive vice-president at Addressograph-Multigraph, Cleveland.

Cronin fills the vacancy created when Thomas Horgan resigned the positions of president and chief executive officer.

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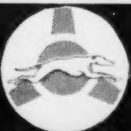
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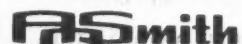
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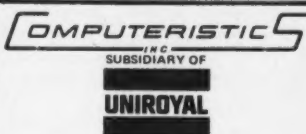
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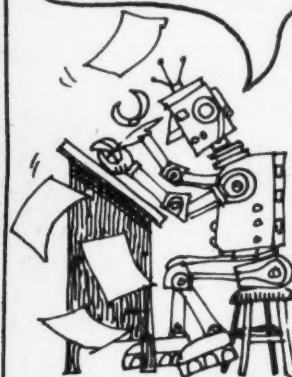
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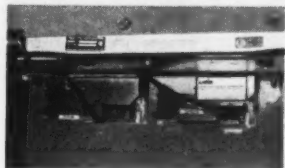
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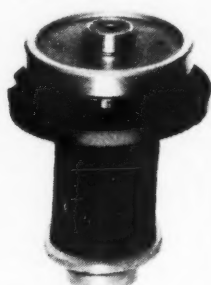
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**Memorex Write-Offs
Mean \$105 Million Loss**

SANTA CLARA, Calif. — Memorex Corp. posted a \$105.3 million loss in the nine months ended Sept. 30, due primarily to half-year write-offs of more than \$97 million, including a \$40 million write-off of the firm's investment in mainframe systems.

The loss for the nine months compares with earnings of \$582,000 or 15 cents a share in the same period last year.

Revenues were up, to \$128.5 million from \$106 million in the year-ago period.

The loss in the third quarter totaled \$3.9 million compared with earnings of \$248,000 or six cents a share in the 1972 quarter. Revenues increased to \$43.2 million from \$36.4 million.

President Laurence L. Spitters said although Memorex's first plan of the year had been "uncertain and most disappointing," the firm has reached basic agree-

ments with its creditors, Bank of America and lenders of ILC Peripherals Leasing Corp., regarding restructuring of debt obligations and providing of additional credit facilities.

In addition to the loss due to the termination of the computer systems program, Memorex's half-year report included write-offs of \$37.4 million related to changes-in-accounting policy for research and development costs and lease acquisition costs (adopted in partial recognition of changes in estimated future benefits); revaluation of certain other assets of \$15.6 million; and a \$5.3 million provision for foreign income tax.

"The new arrangements are designed to allow Memorex to carry out a projected operating plan which will continue its operations as a viable, on-going business," Spitters said.

**Scan-Data Nine Months Improved,
Revenues Exceed All of Last Year**

NORRISTOWN, Pa. — Scan-Data Corp. reported improved nine-month earnings with revenues exceeding those for the year in 1972.

The third quarter, although not as strong for the data entry equipment manufacturer as the same period a year ago, contributed substantially to the nine-month earnings. Quarterly earnings totaled \$34,299 or 2 cents a share compared with \$147,254 or 9 cents a share in the year-ago period, when there was a \$42,582 special credit.

Revenues for the quarter also declined, to \$1.8 million from \$2 million in the year-ago period. Sales were off to \$1.4 million from \$1.8 million, but lease revenues rose sharply to \$58,623 from \$32,980 in the year-ago quarter.

For the nine-month period, revenues rose to \$5.1 million from nearly \$4 million a year ago. Sales rose to \$4.1 million

from \$3.3 million and lease revenues climbed to \$130,503 from \$109,334.

Earnings totaled \$49,685 or 3 cents a share compared with a loss of \$568,389 or 44 cents a share a year ago, when a charge of \$259,000 was made for cumulative effect of changing accounting methods for previously deferred marketing and installation expenses.

GA Sets First Quarter Records

LOS ANGELES — General Automation, Inc. set record highs for quarterly earnings and revenues in the first period ended Nov. 3.

At the recent annual meeting here, President Lawrence A. Goshorn attributed the record results to continuing strong demand for the company's com-

puter products and computer-based automation systems.

Backlog has risen to \$19.7 million, he noted, an increase of about 150% from the \$8.2 million reported in the same quarter last year.

Earnings reached \$894,000 or 35 cents a share compared with \$725,000 or 34 cents a share, including a \$336,000 or 15 cents a share special credit, in the same quarter last year.

Revenues jumped 104% to \$12 million from \$5.8 million in the year-ago period.

HP Figures Rise

PALO ALTO, Calif. — Hewlett-Packard Co. posted a 38% increase in revenues and a 32% increase in earnings for the year ended Oct. 31.

Earnings for the year totaled \$50.7 million or \$1.89 a share compared with earnings of \$38.5 million or \$1.45 a share a year ago, including a \$1.2 million dollar special credit.

Sales reached \$663.1 million compared with 1972 revenues of \$479 million.

The firm's incoming orders for fiscal 1973 amounted to \$736 million, up 45% over orders of \$506.9 million in 1972.

HP President William R. Hewlett noted these figures are only preliminary and are subject to audit.

Tymshare Earnings Up

CUPERTINO, Calif. — Tymshare, Inc. saw its third quarter earnings jump 76% on a 55% rise in revenues.

Earnings reached \$509,203 or 17 cents a share compared with \$288,619 or 10 cents a share in the same year-ago period.

Revenues rose to \$6.3 million from \$4.1 million in the 1972 quarter.

Nine-month revenues rose to \$17.5 million from \$11.7 million, while earnings reached \$1.4 million or 47 cents a share compared with \$683,461 or 23 cents a share in the year-ago period.

**...Toward the
Bottom Line**

General Instrument Corp. has arranged to borrow \$75 million over a seven-year period from a group of 13 banks headed by Chase Manhattan.

Part of the financing is in the form of a \$40 million, seven-year term loan. The remaining \$35 million is provided by a revolving credit agreement.

\$\$\$

Action Communication Systems, Dallas-based manufacturer of data and voice communication control systems, has privately sold \$800,000 of its common stock. The investors are Business Development Services, Inc., a subsidiary of General Electric Co., and Becker Technology Associates.

\$\$\$

Systems, Science and Software reported a 25% increase in revenues, to a record high of more than \$7.5 million, with earnings of \$364,000, for the year ended Sept. 2.

\$\$\$

Third quarter revenues at Datum rose 49% to \$2.5 million from \$1.7 million a year ago. Earnings climbed 38% to \$133,416 from \$96,756.

\$\$\$

Nixdorf Computer AG, German-based parent company of Nixdorf Computer, expects to end the year with a 30% increase in revenues, with most of the increases coming from foreign subsidiaries, including the U.S. operations.

This announcement appears as a matter of record only.

NEW ISSUE

December 13, 1973

\$14,000,000**FOUR-PHASE SYSTEMS, INC.****CONVERTIBLE SUBORDINATED NOTES****DUE DECEMBER 1, 1983**

*The undersigned has acted as agent for FOUR-PHASE SYSTEMS, INC.
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Earnings Reports

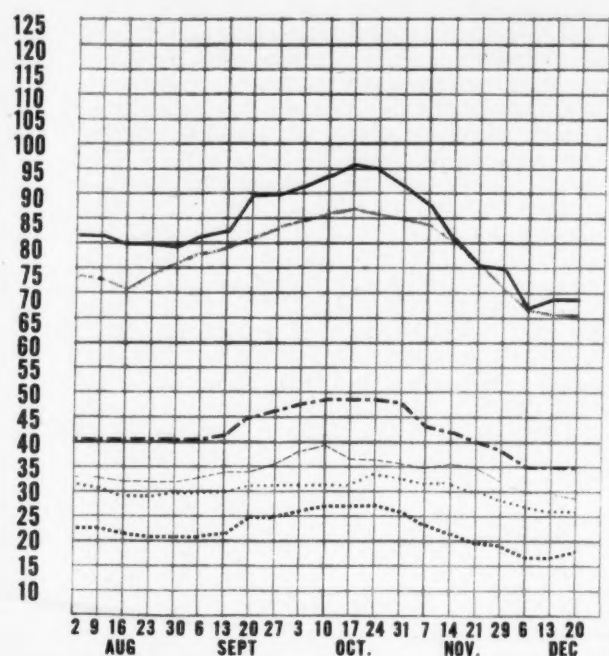
DIGICON Three Months Ended Oct. 31				COMPUTER USAGE Year Ended Sept. 30				WANGCO Year Ended Sept. 30			
1973	1972	1973	1972	1973	1972	1973	1972	1973	1972	1973	1972
Shr Ernd	\$26	\$14		Shr Ernd	\$1.07	\$0.57		Shr Ernd	\$1.06	\$0.61	
Revenue	4,592,000	2,728,000		Revenue	3,862,284	3,640,897		Revenue	10,680,743	4,599,278	
Tax Cred	248,000	20,000		Tax Cred	429,000	233,000		aSpec Cred	51,899	205,000	
Earnings	523,000	272,000		Earnings	907,106	498,541		Earnings	1,155,460	510,673	

WAVETEK Year Ended Sept. 29				COMPAC Year Ended Sept. 30			
1973	1972	1973	1972	1973	1972	1973	1972
Shr Ernd	\$71	\$57		Shr Ernd	\$26	\$64	
Revenue	8,928,790	6,665,195		Revenue	26,636,000	23,889,000	
Earnings	613,150	453,985		Spec Chg	300,000		
				Earnings	270,000	506,000	

a-For 53 weeks.

COMPUTERWORLD Computer Stocks Trading Indexes

Computer Systems Software & EDP Services
Peripherals & Subsystems Leasing Companies
Supplies & Accessories CW Composite Index



ON-LINE SYSTEMS Six Months Ended Oct. 31			
1973	1972	1973	1972
Shr Ernd	\$82	\$30	
Revenue	4,365,912	2,950,607	
Earnings	661,891	235,060	

a-Adjusted for a three-for-two stock split distributed March 7, 1973.

DATA-CONTROL SYSTEMS Year Ended Sept. 30			
1973	1972	1973	1972
Shr Ernd	\$0.05	\$0.05	
Revenue	\$5,431,302	5,191,502	
Tax Cred	14,500		
Earnings	(243,571)	44,386	
3 Mo Shr	10		
Revenue	1,757,302	1,416,502	
Tax cred	38,000		
Earnings	a(23,571)	89,386	

a-Includes \$68,000 provision for inventory adjustments.

DCL Three Months Ended Sept. 30			
1973	1972	1973	1972
Shr Ernd	\$0.09	\$0.09	
Revenue	5,587,000	6,645,000	
Earnings	365,000	332,000	
9 Mo Shr	28	49	
Revenue	17,440,000	21,533,000	
Earnings	1,020,000	1,872,000	

a-Restated. b-Fully diluted.

AGS COMPUTERS Nine Months Ended Sept. 30			
1973	1972	1973	1972
Shr Ernd	\$19	\$19	
Revenue	1,499,108	936,840	
Earnings	81,356	81,387	

BOOTHE COMPUTER Three Months Ended Sept. 30			
1973	1972	1973	1972
Revenue	\$10,613,000	\$12,718,000	
Loss	9,304,000	13,572,000	
9 Mo Rev	35,218,000	40,714,000	
Spec Cred		a1,148,000	
Loss	11,210,000	12,334,000	

a-Gain on sale of stock subsidiaries.

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COMPUTER SYSTEMS						SOFTWARE & EDP SERVICES						SUPPLIES & ACCESSORIES					
1973	CLOSE	WEEK	WEEK			1973	CLOSE	WEEK	WEEK			1973	CLOSE	WEEK	WEEK		
RANGE	DEC 19	NET	PCT			RANGE	DEC 19	NET	PCT			RANGE	DEC 19	NET	PCT		
(1)	1973	CHNGE	CHNGE			(1)	1973	CHNGE	CHNGE			(1)	1973	CHNGE	CHNGE		
COMPUTER SYSTEMS																	
N BURROUGHS CORP	192-252	198 7/8	-5 7/8	-2.8		O ADVANCED COMP TECH	1- 2	1 1/4	-1/8	-9.0		O BALTIMORE BUS FORMS	5- 9	5 1/4	-1/2	-8.6	
N COLLINS RADIO	16- 26	24 3/4	0	0.0		A APPLIED DATA RES.	2- 4	1 3/4	-1/8	-6.6		A BARRY WRIGHT	5- 13	4 7/8	-3/8	-7.1	
O COMPUTER AUTOMATION	5- 20	12 7/8	+4	+45.0		O APPLIED LOGIC	1- 3	1 1/2	-1/4	+100.0		O CYBERMATICS INC	1- 3	1	-1/8	-11.1	
N CONTROL DATA CORP	31- 62	35	+2 5/8	+8.1		N AUTOMATIC DATA PROC	39- 94	55 3/4	+1 3/4	+3.2		A DATA DOCUMENTS	17- 26	20 1/4	-1/8	-0.6	
O DATA GENERAL CORP	28- 49	33 1/2	+2	+6.3		O BRANSON APPLIED SYST	1- 1	1 1/2	0	0.0		O DUPLEX PRODUCTS INC	7- 10	6 3/4	0	0.0	
O DATAPoint CORP	10- 21	13 1/2	+1	+8.0		O CENTRAL DATA SYSTEMS	3- 9	3 1/4	0	0.0		N ENNIS BUS. FORMS	5- 8	5 5/8	+1	+21.6	
O DIGITAL COMP CONTROL	2- 6	2 5/8	0	0.0		O COMPUTER DIMENSIONS	2- 5	1 1/2	-1/2	-25.0		O GRAHAM MAGNETICS	7- 20	7 1/2	-1/4	-3.2	
N DIGITAL EQUIPMENT	73-117	92 1/2	+5 3/4	+6.6		O COMPUTER DYNAMICS	1- 2	1 1/2	0	0.0		O GRAPHIC CONTROLS	7- 12	7 7/8	+1/8	+1.6	
A ELECTRONIC ASSOC.	2- 9	2 3/8	-1/2	-17.3		O COMPUTER HORIZONS	1- 6	2 1/4	+1/4	+12.5		N 3M COMPANY	75- 91	74 5/8	-1	-1.3	
A ELECTRONIC ENGINEER.	6- 14	9	+3/8	+4.3		O COMPUTER NETWORK	1- 5	1	-1/8	-11.1		O MOORE CORP LTD	53- 65	53 1/4	-2	-3.6	
N FOXPRO	23- 48	42 3/8	+1 1/2	+3.6		N COMPUTER SCIENCES	2- 6	2 1/8	0	0.0		N NASHUA CORP	36- 58	40	+3 1/4	+8.8	
O GENERAL AUTOMATION	22- 55	33	+3 1/2	+11.8		O COMPUTER TASK GROUP	1- 2	1 1/2	-1/4	-33.3		O REYNOLDS & REYNOLD	26- 51	30 3/4	+4 1/4	+16.0	
O GRI COMPUTER CORP	1- 3	1 1/2	-1/4	-33.3		O COMPUTER TECHNOLOGY	1- 3	1 1/2	0	0.0		O STANDARD REGISTER	11- 20	12	0	0.0	
N HEWLETT-PACKARD CO	73- 99	76 1/2	-3/8	-0.4		O COMPUTER USAGE	3- 9	3 3/4	0	0.0		O TAB PRODUCTS CO	7- 23	7	-1	-12.5	
N HONEYWELL INC	71-139	73 3/8	+1 1/4	+1.7		O COMRESS	1- 2	1 1/4	0	0.0		N UARCO	15- 23	15 1/2	+1/2	+3.3	
N IBM	240-340	250 3/4	+1/8	0.0		O COMSHARE	2- 9	2 1/8	-1/4	-10.5		A WABASH MAGNETICS	5- 8	6	+3/4	+14.2	
O INTERDATA INC	7- 14	8 3/8	+1/8	+1.5		N CORDURA CORP	3- 15	3	0	0.0		N WALLACE BUS FORMS	15- 26	15 5/8	-1/2	-3.1	
O MICRON DATA CORP	2- 10	2 3/4	-3/8	-12.0		O DATATAB	1- 4	1	-1/4	-33.3							
N NCR	27- 46	30 3/4	-3/4	-2.3		A ELECT COMP PROG	1- 2	1 1/2	-1/4	-33.3							
N RAYTHEON CO	22- 35	28	+1/2	+1.8		N ELECTRONIC DATA SYS.	22- 56	22 1/8	-2 3/8	-9.6							
LEASING COMPANIES																	
A ROOTHE COMPUTER	1- 5	1 1/8	0	0.0		O INFONATIONAL INC	1- 2	1 1/2	0	0.0							
O BRESNAHAN COMP.	1- 2	2	0	0.0		O INFOMATICS	2- 6	5 1/4	0	0.0							
O COMDISCO INC	4- 17	5 1/8	+1/2	+10.8		O I.O.A. DATA CORP	1- 1	3/8	0	0.0							
O COMMERCE GROUP CORP	3- 4	3 1/4	+1/8	+4.0		O IPS COMPUTER MARKET.	1- 5	7/8	-1/8	-12.5							
O COMPUTER EXCHANGE	1- 1	1/8	-1/4	-66.6		O KEANE ASSOCIATES	3- 5	2 1/2	0	0.0							
A COMPUTER INVS TRS GRP	2- 8	2 1/8	+1/8	+6.2		O KEYDATA CORP	4- 12	4 1/2	-1/4	-5.2							
O COMP. INSTALLATIONS	1- 2	1	0	0.0		O LOGICON	2- 7	2 1/4	-1/8	-5.2							
M DATRONIC RENTAL	2- 3	1 1/2	0	0.0		A MANAGEMENT DATA	1- 5	1 3/8	0	0.0							
A DCL INC	0- 3	1/2	0	+14.1		O NATIONAL CSS INC	18- 42	25	-1/2	-1.9							
A DEARBORN-STORM	12- 26	14 1/4	-1/2	-3.3		O NATIONAL COMPUTER CO	1- 1	3/8	0	0.0							
N DFP INC	3- 9	2 7/8	+1/8	+4.5		O NATIONAL INFO SRVCS	1- 2	3/8	0	0.0							
O EDP RESOURCES	1- 3	3 1/8	0	0.0		P ON LINE SYSTEMS INC	12- 25	23 1/4	-3/4	-3.1							
A GRANITE MGT	2- 6	3	+1/4	+9.0		N PLANNING RESEARCH	2- 7	2 1/4	+1/8	+5.8							
A GREYHOUND COMPUTER	3- 6	3	-1/8	-4.0		O PROGRAMMING METHODS	17- 25	17	0	0.0							
A ITTL	4- 12	4	+1/8	+3.2		O PROGRAMMING & SYS	1- 1	1 1/2	0	0.0							
N LEASCO CORP	8- 18	10 1/4	-1/8	-1.2		O RAPIDATA INC	3- 24	3 3/8	+1/8	+3.8							
O LFASPC CORP	1- 8	1 1/8	0	0.0		O SCIENTIFIC COMPUTERS	1- 3	5/8	0	0.0							
O LECTRO MGT INC	1- 2	1/8	-1/8	-50.0		O SIMPLICITY COMPUTER	1- 4	1 1/4	-3/8	-23.0							
O NRG INC	3- 15	4 1/2	+1 1/8	+33.3		O TRS COMPUTER CENTERS	2- 7	5 1/4	0	0.0							
A PIONEER TEX CORP	4- 8	4	0	0.0		O TCC INC	1- 1	1/8	0	0.0							
PERIPHERALS & SUBSYSTEMS																	
N ADDRESSOGRAPH-MULT	9- 34	9 3/4	+3/8	+4.0		O TYMSHARE INC	6- 13	7 1/2	-1	-11.7							
O ADVANCED MEMORY SYS	4- 23	4	-1/4	-5.8		O UNITED DATA CENTER	3- 6	3 1/4	+1/4	+8.3							
N AMPLEX CORP	3- 7	3 1/8	-1/4	-7.4		A URS SYSTEMS	2- 8	2 1/2	-1/8	-4.7							
O ANDERSON JACOBSON	2- 6	1 3/4	-1/4	-12.5		N WYLY CORP	3- 11	2 5/8	-3/8	-12.5							
O REEVE MEDICAL ELEC	5- 10	4 1/2	-1/2	-10.0													
A ROLTA-REANEX & NEW	6- 12	7 3/4	+1/2	+6.8													
N RUNKER-RAMO	6- 18	7	+5/8	+9.8													
A CALCOMP	5- 16	6 3/4	-1 1/4	-15.6													
O CAMBRIDGE MEMORIES	8- 17	12 1/2	-1	-7.4													
O CENTRONICS DATA COMP	13- 38	18 1/2	+2 1/4	+13.8													
O CODEX CORP	8- 19	8 1/2	-1/2	-5.5													
O COGNITRONICS	1- 3	1 1/2	0	0.0													

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
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